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War facts

Washington

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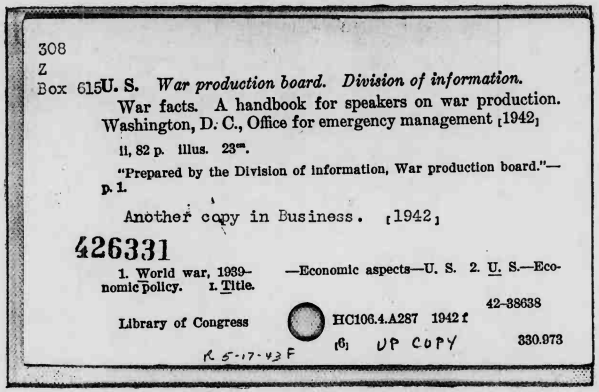

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WAR FACTS

A Handbook for Speakers on War Production

308
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Box 615

OFFICE FOR EMERGENCY MANAGEMENT

Washington, D. C.

No man can be an undiluted optimist these days. Yet I firmly believe that no American who sees the whole picture need give way to dark pessimism either. Our fighting men have proven on bloody fields that the valor and endurance of American manhood are as magnificent today as they ever were. They have shown that if we at home give them just a fifty-fifty chance, by providing them with the weapons and the support they need, they will do the rest.

Speaking for the millions of men and women engaged on the home front in the great job of providing those weapons and that support, I want to say this to our fighting men everywhere:

You have given us hope and courage. We will live up to the ideal you have set for us. We know what your need is: we are going to move ahead and meet that need in spite of any and all obstacles. We will not let you down.

Chairman, War Production Board.

WAR FACTS

A Handbook for Speakers on War Production

OFFICE FOR EMERGENCY MANAGEMENT

WASHINGTON, D. C.

INTENTIONAL SECOND EXPOSURE

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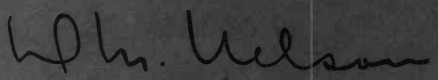

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WAR FACTS

A Handbook for Speakers on War Production

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HOW TO USE THIS HANDBOOK

This handbook has been prepared by the Division of Information, War Production Board, to give public speakers a comprehensive picture of one of the most gigantic and complicated undertakings in history—the American war production program.

The material has been compiled to help speakers explain the scope, nature, and effect of the production program and to give Americans in all walks of life an idea of what their contributions can be. Thus, the subject matter concerns not only the mobilization of our manpower, machine power, and material resources but also the readjustments and sacrifices which have had to be made and will have to be made on the home front.

Speakers using the handbook may follow the phraseology if it suits their purpose, or they may revise it to suit themselves, their audience, and contemporary war developments.

Before you use the handbook, go over it carefully to become familiar with the wide range of material it includes.

The first part of the book includes:

(1) Material on the overall production effort. This can be used in addressing any kind of group, whether composed of technical men or the general public. It deals with the extent of our production program, its place in the offensive strategy of the United Nations, and the steps we have taken to meet our production goals.

(2) A statement of some of the things at stake in this war, intended for any type of audience.

(3) Facts about priorities in the war economy. This is intended primarily for business and management groups affected by the priorities system.

The second part of the handbook consists of material on particular phases of the war effort. There are separate sections on raw materials, industrial conversion, labor's part in the war, and many other subjects. Each may be used in the preparation of a speech to an audience interested especially in that subject; or, if a longer address is planned for the same type of audience, may be incorporated in a speech on the overall war effort.

Suppose, for example, a speaker is preparing a talk before a retailers' meeting, and wants to include something on the ration-

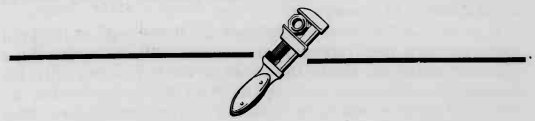
ing program. In the handbook he will find a general statement on rationing, how it works, and why it is necessary.

Or a speaker plans a short talk before a group interested in South America. His subject is our economic stake in South America. The essential facts he needs will be found in the handbook under "Our Stake to the South."

Or a clubwoman wants to address a group on how the consumer is affected by the war program. She will find many of the facts she needs in "Controlling the Cost of Living" and "Rationing for Democracy."

The "skeleton" radio script is intended for presentation by nonprofessional groups in a round-table discussion. It has been kept under the 15-minute limit to allow for interpolations and comments concerning the local community and developments in the war.

Finally, completing the handbook, is a compilation of facts and figures useful to public speakers.



PRODUCE NOW—FOR VICTORY

This is the year of crisis, the year that may decide the fate of each one of us and the fate of generations to come. Between us and a world of darkness are the hours and days, the weeks and months that remain of 1942. The time is short. The task that faces us is of unprecedented magnitude.

We have two jobs to do—one on the home front and one on the battlefront. Our fighting men cannot do their job until we civilians—until all of us at home—do our job. That job is production.

To hold the enemy, to turn him back, and then in the flood tide of our strength to drive to victory will demand all we've got, all we have produced and can produce. And the time to produce is now.

The enemy has gathered his forces for a terrific onslaught against us and our allies. Russia is under deadly attack. She needs our production now. Brave China needs planes and tanks. Australia and India are imperiled. Tanks and planes next year won't do any good this year. We need weapons now. We must produce them now.

Our lifelines on the high seas and in our very coastal waters have been sorely tried by the hammer-blows of Axis submarines. We need ships, more ships—we need ships now.

We have suffered grave defeats because of past delays. More planes, ships, and guns at Wake, Guam, Bataan and Corregidor—on the Malayan Peninsula, at Singapore—might have enabled the fighters of the United Nations to smash the invader. But they needed planes—more planes—and the planes did not come. We didn't have them to send. Our job now is to produce planes in tens of thousands, in time to write our kind of ending to future battles.

We are racing against time. Planes and tanks and ships, produced now, can decide the war. If we hold the Axis on

the present fronts while our strength gathers, we may look to a not-far-distant victory.

If every needed factory, large and small, throughout the land were brought into full war production, with every machine manned round-the-clock, 168 hours a week, pausing only for necessary maintenance and repairs, then we would shorten the war, and there would be no question of complete victory. But if we lag, if we don't put into war production all our energy and imagination and initiative, then we must fight on interminably, always under the shadow of possible defeat.

America's strategy is clear-cut. To win, we must attack, vigorously attack; and we must have the weapons. We must produce.

This is a war of tanks and planes, guns and carriers, trucks and trains. Produce—and attack! It is as simple as that. It is the only strategy that can carry us through the perils of this war.

The enemy started war production in 1933, and he is still producing greatly. He has accumulated great stockpiles of vital materials. He has conquered many of the world's principal sources of materials. To overtake him and forge ahead in this production race, we must out-produce him two and one-half to one.

Germany's national income is about 40 billion dollars a year, and ours right now is over 100 billion. But last year Germany produced about 27 billion dollars' worth of war goods, and our war production was only 15 billion.

We have at least awakened to the urgency of the times. We have ceased mere vaunting of our wealth—as if a billion dollars could, of itself, shatter a Nazi factory, or the unmined ore beneath our Mesabi range of Minnesota torpedo a Japanese cruiser. We have joined our monetary and natural resources for the Battle of Production.

The smoke of that battle pours from thousands of American factory chimneys. Its soldiers are the managers and workers.

Each heavy tank, each bomber that rolls off the assembly line is a skirmish won; each bombsight that emerges from the blueprints sees us closer to victory.

We have set our sights for planes, tanks, antiaircraft guns, tons of merchant shipping. But precious months are gone. In the time still ours we must produce ever more swiftly.

That is the fight for us of the home front—the Battle of Production. It is difficult, wearisome, exhausting, demanding all power of muscle and brain and machine and wealth.

Washington has planned, and is coordinating and pushing, The War Production Board under Donald Nelson has launched a national Production Drive. It has been hammering into the national consciousness that time is of the essence, that time means lives, continents, and oceans won or lost, defeat or victory. All must be brought to realize the meaning of time, to realize that time for production at home is being paid for with American lives abroad.

Washington can plan and exhort, but the guns, ships, planes, and tanks must come from the factories. The production drive can go through to victory only if the whole country joins brain and muscle into the greatest job it ever tackled, molding to it our way of life, for the duration.

No new motor cars now—tanks and airplane engines instead. No radios and typewriters—flying instruments and shell-casings instead. This conversion from peacetime to war production is the keystone of our war effort. The conversion goes fast, but still takes time, and time is flying. We must make full use of all our present munitions-making facilities if we are to reach—to pass!—our present goals.

Every day that a useful machine stands idle, or a mill makes luxury goods when it could work for war, is a day of betrayal, a day wasted of days bought with American lives.

To management conversion means worries and headaches over terrifically stubborn problems. It means tramping the rounds of procurement agencies which have war jobs to place. It means learning new techniques, contriving to make machines produce what they were not made to produce. It means training workers to perform operations they have not performed before. It means meeting stepped-up-production schedules, meeting them in spite of materials shortages and labor shortages and technical problems.

Manufacturers and engineers are facing the same problems, working out solutions to them. Solutions and successful techniques must be exchanged freely. If a manufacturer devises a way to break a production bottleneck, it is his duty to tell his fellow manufacturers about it. We're not competitors any

more. We're all partners in the biggest production undertaking the world has known.

Conversion is only part of the job. The largest war orders went, naturally, to the largest plants, which were equipped to handle them. They could probably do the job themselves, given time, but it will go more quickly if shared with small plants not yet in war work, if we use every suitable bit of our production facilities.

Some of the big companies have adopted a system of subcontracting whereby small business may assist and may assume its share of the production load. A plant with 30 workers cannot build a bomber but it can make one of the thousands of parts that go into that bomber. Such small plants number tens of thousands. Those with 100 employees or less total 170,000. Obviously, our full power of production cannot be set to work without widespread subcontracting.

A major move to spread the work was the order issued by the War Production Board suspending competitive bidding on most orders from the Army, the Navy, and the Maritime Commission. Large concerns already overladen with war orders had often been able to outbid small manufacturers who had none; and capable small firms had thus been kept out of war production. Dispensing with competitive bidding geared more of industry into the war effort.

No manufacturer need fear that he will work himself out of orders by working full time around-the-clock; our schedules must expand to the huge quotas ahead. The only ceiling on our war production is the utmost reach of our industrial power. With that we shall smash the Axis. Nor shall we boggle at reasonable costs, nor query who does the job, or how.

Only victory matters, and everything in the way shall go. Is the impossible demanded of us? We shall do the impossible. We must cast aside old routines and measures.

Our old standards may tell us that our mines are at capacity production. What then? We increase production, we exploit low-grade ores, unprofitable in normal times. We tell management and labor to work out new schedules and methods, we discard long-standing commercial and industrial practices, disregard privilege and prerogative. The job is to be done. It shall be done—at whatever cost.

The American home, too, has its part to play, in unrelenting vigilance against waste. Waste can lose the war, vigilance against it can be the price of victory. Conservation in the home—of automobiles, washing machines, clothing, food—may save for our armed men the materials and machines to win in battle.

And on the home depends the salvage of junked materials; from the dingy scrap-heap emerge tanks, guns, planes. Equitable distribution of goods, and defense against inflation, depend on the home front. And, finally, the home front has the responsibility for maintaining the nation's morale and rejecting defeatist and appeasement propaganda.

The job we have taken on demands a spirit of burning patriotism. In that spirit, we all accept the three-fold pledge voiced by the President of the United States:

First: We shall not stop work for a single day. If any dispute arises, we shall keep on working while the dispute is solved by mediation, conciliation, or arbitration—until the war is won.

Second: We shall not demand special gains or special privileges or advantages for any one group or occupation.

Third: We shall give up conveniences and modify the routine of our lives if our country asks us to do so. We will do it cheerfully, remembering that the common enemy seeks to destroy every freedom in every part of our land.

That is our pledge. It is our answer to the Nazi plot to conquer the world—our answer to Axis brutality and terrorism—our answer to Japanese treachery over Pearl Harbor.

We shall be judged before all future generations by the energy and determination with which we back up this pledge. Our love of liberty will be gauged by the number of tanks we produce. Our devotion to democracy will be no greater than the number of war planes we set loose. Our very self-respect as human beings will be in direct proportion to the number of ships that slide down the ways.

We face the supreme test. We have adopted the only strategy that can give victory. For all we cherish, for ourselves and for those to come after us in the land we love and revere, we shall produce—and attack.

AMERICA MUST WIN

There are a few simple facts of everyday American life that not all of us have recognized. Even the great majority of us, who have recognized them, sometimes lose sight of their terrible significance. I want to remind you of those facts and to tell you what I think they mean to each one of us and what can happen to us individually and as a free people, because of them.

I am not talking now to the blind and obstinate few—you may know them—who scoff at the threat of Hitlerism, the people in this country who don't believe in Hitler as the most deadly enemy America and democracy have ever faced. Shucks, they say, Hitler's right name is Schicklgruber, and he's only a paper-hanger. These scoffers are like no one so much as the hard-headed American backwoodsman of a bygone day who didn't believe in elephants. Even when he was shown one, he said: "There ain't no such animile."

The ignorance and stubbornness of that backwoodsman are still among us. This war doesn't get our modern backwoodsmen het up. It's none of their business, none of their personal concern—they think! God forbid that Adolf Schicklgruber ever has the opportunity to reveal his true nature to them in person.

The great majority of us, I think, realize that now, as in the days of the American Revolution, our Nation's fate is in the balance. The crisis we face today is as grave as any in American history.

Patrick Henry, and other patriotic Americans of his day, had to choose between a life of oppression and a life of freedom. They chose—and laid the foundation of the free country in which we live today.

We, too, have to make that choice. Just as circumstances compelled the early American patriots to fight for freedom and a better way of life, so do circumstances compel us today. Since Patrick Henry's day, American life has changed and all the political and economic changes have added to our peril.

We'd appreciate the change, and our vastly greater peril, could we visit the America of the Revolution. There we would see a land where the average man was self-sufficient and could conceivably remain indifferent to the problem of people a hundred miles away, to say nothing of the affairs of nations across the sea.

However, we know that even then Americans were learning to fight together for common ideals and principles and the common welfare. They fought the Revolutionary War together and built an independent nation based on their dependence upon each other. A few years later they fought the War of 1812 to maintain their rights to the high seas and to trade with other nations. But life was much more simple then than it is now, and the people of America were comparatively self-sufficient. Let us look in on Patrick Henry the day he addressed the Virginia Convention.

We see him waking in the dim dawn, pondering the talk he will give before the Convention . . . Can he swing Virginia into line with the other colonies willing to fight for common principles?

He strikes flint and steel, lights a homemade candle, re-reads the speech he penned with a quill of the wild goose that had been his Christmas dinner. He glances toward the open window, wondering if the guns are already booming up in New England. The next traveler or post from the North may bring news of the clash of contending arms!

He puts on his homespun clothing, his boots from the village tannery and cobbler. Goes down to his eighteenth century breakfast—homemade bread, cheese, and beer—home-brew.

He fills his pipe of Virginia clay with bright Virginia leaf, stirs the logs from the home wood lot. If there's a thing in the house that isn't homemade, he's proud of it—a bit of lace, a porcelain cup.

He puts on his deerskin or coonskin hat—*not* from Danbury, Conn.—and goes into his yard. He passes his well, his smokehouse, his coldcellar. He shouts for the stable-boy—reared on

the place—who brings the horse—bred on the place. He's off to the Convention. He passes a neighbor and gets a news flash from Boston—hot off the horse, only 2 weeks old.

Food, clothing, shelter, transportation, and news, his smokes and drinks, reflect his personal independence. He seems self-sufficient—a man who could argue that he was unconcerned and unaffected by the troubles and agitations of other men, either on his own soil or in a foreign land. What does it matter to him, he might ask, if there are men dying at Concord or invaders forcing a landing along the New England shore?

Fortunately, for those of us who have come after them in this land, those early Americans did recognize that they could not be free and safe from marauders and despots, unless their neighbors were also free and safe. Fortunately for us, they chose to live by common ideals and principles or to die by them.

Now let's leave Patrick Henry and visit with an average modern American, waking up in his Grand Rapids bed, reaching to shut off an electric alarm clock and to turn on an electric light. He turns on his radio for the news, which he can't hear because of the noise his electric shaver is making.

His pajamas are from Fall River, Mass., his bathrobe from an Atlanta mill. He washes in water piped from 50 miles away, heated by Pennsylvania coal or Texas oil. Puts on a shirt from Troy, N. Y., a suit from Buffalo, shoes from Stockton or Hackensack, and sits down to his twentieth century breakfast with his wife, a peach from Georgia.

What does he eat?

Citrus from Florida or California, cereal from Ohio, an egg from Wisconsin. Bacon from Chicago, coffee from Brazil, sugar from Cuba. And he lights a cigarette made with tobacco from Virginia, Kentucky, Louisiana, and the Near East.

No smoke house, no well, no cellar, no wood pile. In ordinary times, at least, when he doesn't have to think about saving supplies, he gets into the car—F. O. B. Detroit—with tires from Malaya and the Dutch East Indies—and his wife rides with him as far as the neighborhood store to buy the day's dinner—part of it packed in Far Eastern tin.

In this home of average Americans there is nothing that they made or grew themselves—except, perhaps, a rubber plant that doesn't produce rubber, and the Swedish popcorn bedspread

that Mrs. Average American is crocheting as a lifework. She's been at it now for four years.

The average American lives comfortably and usefully in a society where all labor is minutely specialized. In return for the specialized services he performs, he gets the fruits of the specialized services of his fellows. He exchanges the products of his specialized labor for the products of other specialized labor in every corner of the world.

Think for a moment how the airplane, fast trains, cars, and trucks, the radio and telegraph have reduced the size of the world and increased the dependency of man upon his fellows, wherever they may be.

It is not much farther now from New York to San Francisco than it was 200 years ago from a man's farm to his closest neighbor. It is not as far from New York to London as it was in Colonial days from Jamestown to Plymouth Rock.

It took weeks for Indians to come out of the Canadian wilderness to raid New England farmers. If our enemies seize bases or send carriers within range of our shores, it will take their bombers but a few hours to reach our populous cities.

By the extent that life has increased in complexity since the days of Patrick Henry, so has our common interdependence increased. We Americans are not only dependent upon each other for the preservation of our ideals and the maintenance of our standard of living; we are dependent on the peoples of almost every other nation, and they upon us.

Assume for a moment a partial Hitler victory. Assume that we are able to keep Hitler and his armies—victorious in the rest of the world—from invading our country. Is it conceivable that we would be able to maintain our economic life and the standards of living of which we are so proud?

Hitler would have virtually all the rubber and tin in the world at his disposal. He would have a monopoly on many other materials which are part and parcel of our everyday life—silk, coffee, spices, tea.

Further, assume that we developed substitutes for many of these materials and were able to maintain a semblance of our present internal economy. Assume that Hitler would permit us to trade with the countries under his domination. On whose terms would we buy? On whose would we sell? American labor and American capital would be obliged to compete with

Hitler's slave labor and regimented enterprises. Further, the genius of our people would be turned to war permanently to ward off invasions of our homes and our rights. We would become a military state—we could not survive otherwise.

Would democracy persist? It must be plain to all that lasting militarism, with its necessary regimentation of men and machines, would put a fearful strain upon our democratic system.

Would religion survive unpersecuted, teaching human brotherhood and charity for all? Those were the doctrines, denounced as un-Roman, that put the first Christians in the catacombs and in the arena. How long before they would be denounced as "un-American"? The old gods of greed and lust would rise again, and the temple of Janus, two-faced god of War, would reopen—after 1900 Christian years.

It is a dark picture, and yet too optimistic, because, so far, we have assumed that, having lost our Allies and the materials of five-sixths of the world, we would be able to stave off total defeat.

We know what military defeat by an Axis power does to a modern nation—we don't have to guess.

Look at Poland, where tens of thousands of human beings are dying at home of plain starvation. The country has been stripped of its wealth, its food, its clothing.

Poland has become a slave state, forced to provide food and clothing for the Nazi conquerors. For the Poles, until the yoke of the conqueror is thrown off, there will be no freedom, no liberty. They are now a physically enslaved people, ruled by a hard ruthless master.

And defeated France—France where equality, liberty, and fraternity were the watchwords of a great republic. There the super-Quislings have taken over, fawning to their Nazi overlords, betraying their people.

Children are dying or growing with twisted bones in France because there is no milk for them. And the reason there is no milk is that the Nazi conqueror has either slaughtered or seized the cattle for his own people. In France, liberty, fraternity, and equality have lost a battle.

The French peasant, who *is* France—his son, and, yes, his wife—are forced to go into the land of the conqueror to till his land and work in his plants, in order that the conqueror's people may be well-fed and well-armed to plunder the world.

It is the same in other lands under the Nazi heel—Denmark and Norway and Greece and Czechoslovakia. In all of them, there is starvation and oppression.

That is the kind of peace that Hitler offers, and the kind of peace that would be ours if we fall before Hitler.

That's why we can—and must—and will—win this war. And why our foes must—but can't—and won't—finish us this time. America is incomparably the strongest of nations—strongest in war, when she gives mind and heart and hand to it, just as she was strongest in peace when she gave her best to enterprise. The outcome of this war is up to us, to us run-of-the-mill, rank-and-file Americans. If we give our best to the business of war, the Axis doesn't stand a show. But we must realize what this war means to us and what it may do to us.

Have we the plain horse sense?

If one of us was in a lifeboat from a submarined ship, as some Americans have been lately—out there on salt water—he'd do his mortal best to keep that boat floating and going. He wouldn't complain or keep his eye on the other fellows to see that he wasn't doing it all. He'd try to do it all himself. He'd realize that the fight was his.

Remember this: Germany is trying to sing us to sleep, as France was sung to sleep. Berlin is telling us that this is not our war, but Britain's war. Our enemies are cunning, and they have studied us, reaching for the soft spots. Day and night German propaganda seeks to set American against American, to stir racial and class hatred among us, to soften our will to destroy Hitlerism and Fascism wherever it appears.

But most of us are too smart to fall for this trickery. Most of our employers and workers have pitched into the Production Drive fostered by the War Production Board. They've formed their plant committees, representing both labor and management, to operate for the duration, and consider only one question: How can we increase and speed our output? The answers are sometimes hard on management—on labor—on ownership, but the only thing that counts is to get the stuff out—fast!

Employers have generally been cooperative with Government. They have helped by pooling tools, by directing skilled workers to where they can be most useful, by cutting down or eliminating civilian production and converting plants to war production.

Labor has given up fundamental rights for the duration of our common struggle.

Every American has his part to play in this war, and upon how well each of us fulfills his particular responsibility depends the outcome.

When we pull together, we can't be stopped. We have what victory takes, if we use it, all of it, and if Mr. A. (for Average) American pitches in.

It's his war. What he has to do, let him do with all his might. His job may seem far removed from the war effort, but it isn't. They also serve—including Miss A. American, who's joining a Nurses' Aide Corps, and Mrs. A. American, who's dropping the Swedish popcorn bedspread to make surgical dressings—who free the able-bodied for the fighting and the assembly lines.

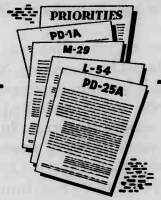
The President has fixed our goals, our production for victory program, calling for planes, tanks, antiaircraft guns, tons of shipping. To meet these goals, we have time bought for us on Bataan and on Corregidor, bought by Americans in a hell of fire and steel.

Will we waste this time? Will we waste the American blood that bought it, the American courage that's holding it? Every minute of it, day and night, is a sacred trust.

We must win this war. Or our epitaph through the centuries will be: Too little—in mind and heart—too late—by a year, a month, a day.

We can and will win this war—but now is the day and the hour.

If we fail our boys in uniform, they'll die fighting. If we get them the planes, the tanks, the guns, and ships, they'll fight and win—and live. Let us, American men and American women everywhere, give heart and hand to this work. For ourselves and for America—peace with victory!



PRIORITIES IN THE WAR ECONOMY

The American people have no reservations about this war. The stakes are all or nothing. It would be as foolish for the United States to hold back any effort or sacrifice which might hasten winning the war as for a man in danger of drowning to cling to a sack of gold.

Nothing we save now will be of any value if we lose the war, and the cost of prolonging the war for a single week would be far greater than the cost of any change in our normal civilian economy which would help to win the war sooner.

There is no disagreement about the necessity for devoting every bit of energy, every ounce of materials, and every machine which can be used, to war production. But the job is easier to talk about than to carry through. Stopping the production of automobiles did not automatically start production of tanks, and giving up new radios is only one small step toward increasing the output of fighting material.

We are engaged in the fastest transformation of a whole national economy which has ever been attempted. It is a job which requires coordination, planning, and direction, as well as good will. The needs of the armed forces must be determined in advance, and production must be scheduled to meet them. The whole Nation at home is devoting itself to the job of sending fighting materials all over the world, wherever our own soldiers and our allies are in direct conflict with the enemy.

At the heart of this gigantic task is the priority system. In one sentence, priorities and allocations are the instruments used to direct the flow of materials into weapons and ships and all

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of the other things which go to make up the overwhelming force necessary for victory.

The original purpose of priorities was, quite simply, to give *preference* to orders placed by the Army, Navy, and other defense agencies. Before long it became apparent that it was necessary not only to put military orders ahead of civilian requirements but also to reserve the scarce materials for essential uses and to curtail or shut off the production of unnecessary goods. Automobile production was reduced before Pearl Harbor, and since then radios and vacuum cleaners and hundreds of other articles have been cut out for the duration. Finally, it became necessary to establish direct control over the distribution of all available supplies of almost all metals and many chemicals and other basic materials such as wool, fibers, and special quality leathers.

These successive steps in the development of a war economy were marked by priority regulations and orders which established the system of putting military requirements first; by limitation orders curtailing production of nonessential products; by conservation orders controlling the distribution of materials; and by allocation of scarce materials.

The priorities system is a fairly complicated pattern made up of all of these kinds of control. They are embodied in "L" orders and "M" orders and formal regulations which have full force of law and carry heavy penalties for violations. But this system as it existed up to a few months ago was not enough to meet the demands of total war.

In the early days of priorities, when we were working on a defense program instead of a war program, the most important priority instrument was the preference rating—the A–1–a or A–3 or A–10 which indicated the relative importance of any given order in the defense set-up. Producers and suppliers were told to schedule their deliveries in accordance with the preference ratings on orders they received, postponing unrated orders wherever necessary to make sure that the rated orders could be filled on time. Ratings are still used but their use is now limited in certain ways which I will explain later.

Preference ratings are assigned in various ways. Some of them are issued on individual certificates by the armed services and other Government agencies, and by the War Production Board.

Others have been assigned by the limited blanket rating orders, or "P" orders, which until recently permitted the use of a rating,

without special permission, by a whole industry or group of industries. For example, any company defined as a petroleum enterprise was entitled to an A–2 rating for material to be used in exploratory wells, and an A–8 rating for any material needed for maintenance and repair of an operator's equipment, under the terms of preference rating order P–98.

The broadest of these limited blanket rating orders is P–100, which permits almost any business, except a retail store, to use an A–10 rating for repair, maintenance, and operating supplies.

Still another group of orders carries ratings for construction projects.

It is obvious that with preference ratings assigned in all these different ways, including the blanket ratings which could be used without any report to the War Production Board, it was impossible to establish any direct relationship between the available supply of materials and the volume of materials ordered by thousands of companies with the benefit of preference ratings. When serious shortages began to develop, even for military requirements, the system was no longer adequate. For a number of materials, no rating lower than A–1–c was any good at all, and there was a natural tendency to cheapen the value of preference ratings by issuance of an increasing number of A–1–a's and even double A's (AA).

Two things have been done to cope with this situation:

First, many of the scarcest materials, especially metals and chemicals, have been placed under direct allocation by "M" orders. Producers of materials under this type of control are required to submit delivery schedules in advance each month to the War Production Board, and, in fact, they are told just where they can make deliveries and how much they can deliver to each customer.

The second step has been taken by making the Production Requirements Plan mandatory for almost all large users of metal. The importance of this step lies not only in a closer quantitative control over the volume of materials to which preference ratings are assigned, but also in the fact that no company operating under the Production Requirements Plan is permitted to use or extend any other form of preference rating for materials used in production.

This means in practice that none of the large users of metal, including Government arsenals, munitions plants, and shipyards,

can use any blanket rating or individual preference rating certificate except for new construction or capital equipment. This extension of the Production Requirements Plan immediately eliminated a very large part of the uncontrolled use of preference ratings, and will eventually enable the War Production Board to make sure that preference ratings are not issued on orders for larger quantities of scarce materials than the available supply.

Under the Production Requirements Plan, an applicant applies for preference ratings only for the quantity of materials which he will actually use during a calendar quarter. If his application is approved, he will receive ratings for the specific quantity of materials which can be made available to him on the basis of the importance of his operations in the war economy, and he will not be permitted to accept delivery of more than these specified quantities, even though he might be able to obtain the material without the use of a preference rating. In addition, the schedule of deliveries which he is permitted to accept must be spread over the calendar quarter so that he will not receive more than he actually needs at any given time.

Every applicant under PRP must report his inventories of all scarce materials, the war and essential civilian orders which he expects to fill during the quarter, and his estimated requirements for additional material for the quarter. He must also indicate the percentage of his anticipated shipments on various preference ratings. For example, he may indicate that 75 percent of his output of a certain product will be shipped on orders bearing a preference rating of A–1–a, 15 percent on A–1–c orders, and the rest on orders with ratings of A–3 or lower.

All of these factors will be taken into consideration by the War Production Board in the assignment of preference ratings to PRP applicants, and in determining the maximum amount of materials they will be permitted to receive in a 3-month period. The inventory control provided by PRP is particularly important: If a company has large inventories, the amount of new materials it can get in a quarter will be correspondingly reduced.

For the scarcest materials, such as aluminum, copper, alloy steel, and certain chemicals, month by month allocations continue in effect. But no company operating under the Production Requirements Plan may receive allocations for a greater quantity

of material than it is authorized to receive under the plan. The Materials Branches of the War Production Board, which make the allocations, will endeavor to fill the authorizations so far as possible, but until the relation between supply and demand has been brought under even stricter control than it is at present, a PRP authorization cannot constitute a guarantee of delivery in all cases.

The Requirements Committee of the War Production Board makes broad allocations of the available supply of metals in terms of industries and end uses, and these allocations are translated into authorizations for particular companies under the Production Requirements Plan and by individual allocations under the "M" orders. Eventually supply and demand will be closely balanced in this way, but for the present an interim procedure is in effect, which provides much stricter control than before, but does not yet attempt 100-percent allocation of all scarce materials.

For the benefit of companies not now operating under the Production Requirements Plan, especially the smaller companies, a "kitty" of scarce materials is set aside by the Requirements Committee which is distinct from the amounts to be authorized under PRP. These materials will be distributed through the use of blanket ratings and individual certificates in the older manner until further notice.

To provide an even closer check on the use of materials and a firmer basis for allocation, WPB has developed a set of allocation classification symbols which are to be placed on all purchase orders, except for retail business, to show the end use of all scarce materials.

Applicants under the Production Requirements Plan for the fourth quarter of 1942 may be required to indicate the end use of materials, reported in terms of this classification. The allocation classification symbols, placed on all materials orders from manufacturers and reported on Production Requirements Plan applications and other forms to the War Production Board, will show exactly where the bulk of materials is going and the importance of its use in war and essential civilian production. The symbols are passed along on orders from user to manufacturer, from manufacturer to supplier, and so on until they reach the raw material level. In this way they will provide information

and a check on the actual use of materials and products in the war program.

These symbols consist simply of numbers identifying major industries or uses, such as class twenty point zero zero (20.00), which identifies machinery and equipment for industrial uses. Under these general classifications are subdivisions such as twenty point ten (20.10)—metal working machinery; and twenty point twenty (20.20)—other industrial machinery. Purchasers' symbols, such as USA for Army, are used to identify broad classes of buyers.

When a manufacturer's products go to several different classes of end use, he will indicate on his purchase orders and on his reports to WPB the percentage of materials used for each, as he obtains the information from his customers and his records.

This is a fairly complicated set-up, and it will require a lot of paper work on the part of American business. If you think of it merely as a bunch of red tape imposed by a bureaucratic government, you are likely to be annoyed and irritated, but if you stop to consider the volume of records which any large business must keep for its own use, and remember that the War Production Board is now required to keep such over-all records for the coordination of all of American industry in the war program, you may begin to appreciate the genuine efforts which have been made to keep paper work to an absolute minimum.

If this were an old-fashioned war, we could perhaps afford to blunder along on the basis of everyone doing the best he could in the pious hope that it would all add up to sufficient production to lick the Axis Powers. But no such haphazard method is sufficient in total war as it is waged today. We have simply got to achieve real coordination of effort on the part of many thousands of independent corporations and businessmen, and we cannot leave the results to chance. When you look at it this way, I think you will begin to understand why the War Production Board asks and expects full cooperation in bookkeeping and reports, as well as in actual production, from every segment of American industry.

There is scarcely any phase of American business which is not now affected directly or indirectly by priorities. It would be impossible in a speech or even in a book to cover all of its ramifications throughout the American industrial system, but I will try to summarize for you the broad outlines of the priorities pattern as it affects various classes of businessmen.

Large companies which use more than $5,000 worth of metal in a quarter are, with a few exceptions, required to operate under the Production Requirements Plan. They constitute most of the big producers and, as I have indicated, their priorities problems are almost entirely covered by PRP. Smaller companies and special classes of large companies not required to use PRP may obtain priority assistance in the following ways:

First, by individual application on PD–1A certificates.

Second, by assignment of ratings in accordance with the directions of the Army and Navy Munitions Board by Government procurement officers on PD–3A certificates.

Third, by limited blanket rating or "P" orders which apply to various individual industries.

Fourth, they may use an A–10 rating under Preference Rating Order P–100 for maintenance, repairs, and operating supplies.

Fifth, they may receive definite month-to-month allocations of certain scarce materials upon application under the terms of materials or "M" orders.

Sixth, wholesalers and distributors may apply for priority assistance to maintain stocks sufficient to supply war industries and essential civilian requirements by using a special form known as PD–1X.

Seventh, applications for priorities on export items and for export licenses may be submitted to the Board of Economic Warfare.

Any company, whether it operates under the Production Requirements Plan or not, may submit individual applications on PD–1A certificates for capital equipment, and when plant expansion or new construction is necessary in the war program, project applications may be submitted, usually on Forms PD–200 and PD–200A.

Retail stores and individuals who buy from retail stores do not usually come directly under the priorities system. It would be obviously impossible to handle priority applications for purchases by 40 million American families. Instead, the War Production Board has endeavored to take care of essential requirements for home maintenance, and needs ordinarily supplied through retail stores, by making priority assistance available to the wholesalers and distributors from whom retail stores buy most of their stocks. No one expects retail business as usual, and home owners must go without nonessentials, but as many

materials as possible will continue to be made available to them through the usual channels.

I have already mentioned the "M" and "L" orders which are the chief instruments for imposing the limitations of the priorities system.

Materials or "M" orders, also known as conservation orders, place scarce materials under varying degrees of control and prohibit or restrict the use of such materials in nonessential products. These "M" orders also, in some cases, provide complete control over the distribution of basic materials.

The limitation or "L" order is a direct prohibition against, or restriction of, the manufacture of nonessential products. The stoppage of automobile production was accomplished by an "L" order, as was the curtailment or prohibition of production of many other items such as electric refrigerators, vacuum cleaners, metal furniture, typewriters, and a host of other things.

To enforce its orders, the War Production Board has several implements. Most frequently used to date is the suspension or "S" order which withdraws all priority assistance from a company which violates priority orders, and may practically put a violator out of business. Criminal penalties are also provided in the Second War Powers Act.

The basic document of the whole priority system is Priorities Regulation No. 1. This regulation establishes the system itself, and provides certain general restrictions, notably a requirement that all inventories must be kept to a practicable working minimum. The inventory restriction applies to every company in the United States, whether it uses priority ratings or not. Until recently, this control was fairly loose, and permitted a considerable difference of opinion about the size of a practicable working minimum inventory.

In normal times, it would be natural for any manufacturer with a large volume of orders on his books, such as manufacturers engaged in war production now have, to take satisfaction in a well-stocked inventory, particularly when materials are scarce. Today, however, an excessive inventory is a direct interference with the war program. We have converted the old facilities and created new ones to such an extent that the chief limit on our future war production is the volume of materials which can be made available for the machines. Under these circumstances, any aluminum or copper or steel or vital chemical which is

unnecessarily idle in any company's stock reduces by that much the number of planes and tanks and explosives which we can supply to our fighting forces now, when they are most desperately needed.

The primary function of the priorities system today, therefore, is to schedule deliveries of materials and products in such a way as to bring about the maximum production of war and absolutely essential products which the United States with all its vast resources is capable of making.

As the whole industrial machine of America becomes an arsenal of democracy to the extent that everything else is subordinated for that purpose, the loyalty and cooperation of every worker in this huge arsenal become essential to victory.

Every worker and every factory, every bit of material and every machine, is now a part of the war program. No use of material is unimportant and no company has a right to think of its own operations except in connection with the war program. Priorities must be accepted on this basis, and a strict observance of not only the letter but the spirit of the priorities system is a high patriotic duty.

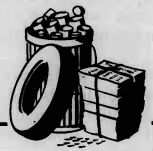
There are no longer any distinctions between soldiers and civilians when the bombs fall, and there are likewise no distinctions between soldiers and civilians in massing the forces of the Nation for total war.

Material has become just as important as fighting manpower, and any failure to produce material which might help to win a battle is just as serious as failure of soldiers under fire.

Priorities regulations, the Production Requirements Plan, and the Allocation Classification system may seem prosaic and unexciting, but the priorities system has been sufficiently tested so we know that it will work, and it is your responsibility as well as ours to make it work.

Never forget that priority orders are the basis for production of planes and ships, and that a day's delay in carrying out orders on the home front may mean a day's delay in achieving ultimate victory.

(Note: The priorities system is constantly undergoing change and readjustment to cope with the growing magnitude of the war production effort. Therefore, it would be advisable to check with the Division of Information, War Production Board, before using the material above.)



CONSERVING FOR WAR

Americans have not been accustomed to think in terms of conservation. We have been the most wasteful people in the world. Geared to an economy of plenty, American industry cut its patterns in the large and brushed aside the shavings and butt ends. Slag heaps were mines of unused ore and culm banks were rich in wasted coal. The householder bought the new and threw away the old—crammed attics and junk piles with worn-out material whose further use was no concern of his.

But the people of less-favored nations, where scrimping and saving were a regular order of life, were glad to take our scrap and rework it into articles for daily living or—among nations that have become our enemies—into instruments of war and destruction. Time was when a boatload of scrap iron loaded at Boston could be sold for higher prices on German pierheads than in Pittsburgh. Discarded tires from American automobiles went to make shoes for Italy and Spain. American waste paper lined Chinese huts.

But total war brought America face to face with the problem of conservation, with the necessity of turning its every available resource of raw and used materials into war production. Scrap is no longer a nuisance to be got rid of but an important part of our national treasure—something to be sought out, collected, and returned to productive purposes. The junk heap has become a treasure heap and the scrap collector a very important person in our victory drive.

American mines, mills, and factories are now conscientiously salvaging their waste.

The attics, cellars, garages, and ragbags in America's 32 million households have been, and must be, ransacked for every bit of strategic rubbish that can be reworked into some useful article of commerce or war.

Today we Americans must become increasingly conservation-minded. We must learn to take care of what we have, to make things last longer and go farther, to see that repairs are not neglected.

America needs to "keep scrapping" on its home front as well as its battlefronts. Metal and rubber are the bone and sinew of the war machine. The metal that is consumed in battle is irretrievably lost; the steel in the tank that is blown to bits in Libya, the aluminum in the plane that is shot down over Germany, the steel plates in the tanker that goes to the bottom of the Atlantic, the casing of the projectile that explodes in Russia—this metal is gone forever. Much of it must be replaced by the idle scrap still in American junk piles, in auto graveyards, in abandoned railroad lines, in unused bridges, in ghost mines full of rusting machinery.

Organization is of course essential in getting this scrap into war production. Most elements of the waste materials trade, a 2-billion-dollar business, have cooperated wholeheartedly. The many phases of the salvage problem are directed and coordinated by the Conservation Division of the War Production Board.

The principal types of waste material that must be salvaged from industry, farm, and home are rubber, all kinds of metals, paper, wool and cotton rags, and waste cooking fats.

Collection of scrap rubber is a particularly essential part of our war conservation effort. Over 90 percent of our sources of crude rubber are now in the hands of the Axis, and shipment from another 7 percent of the areas is uncertain. Torn bathing caps, old tires and tubes, worn-out garden hose, rubber mats, indeed every ounce of useless rubber must be channeled back to the reclaiming plants. Mixed with crude rubber, it can be stretched to vital uses in our military machine. A modern army travels on its rubber. In a 28-ton (medium) tank are 1,750 pounds of rubber, enough to supply 120 automobiles with spare tires. And we are making thousands of these tanks. Fifty different items on a combat plane require rubber, including tires, de-icers, lining for bullet-proof gas tanks, and the like.

The Government is not in the collection business. Scrap rubber, paper, rags, and metals should be put back into production through regular channels. Sell the scrap you collect or give it to the Boy Scouts or a charitable organization.

Wartime industry is faced with unusual problems in conservation of critical materials. Ingenuity and expert advice are needed to solve these problems. Substitution, simplification, and revision of specifications are the methods.

Here again the Conservation Division of the War Production Board comes into play. At intervals it issues comprehensive reports on the relative scarcity of materials needed in military and civilian production. The status of the listed materials is constantly changing. In the first group are those scarce materials critically essential for the prosecution of the war—alloy steel, aluminum scrap, toluol, nylon, rubber. In a second group are substances also necessary to war manufacture but not drastically limited in supply—for example, lead, wood pulp, and rayon. A third group includes materials that are generally available for substitution—such as clay, casein, glass, salt, silver, and gold. In no case, however, can supplies be considered unlimited. A new-found war use may move a specific material from the last group to the first.

Many interesting examples can be cited in which comparatively plentiful materials have been substituted for more critical ones. Toys are now being made of wood, paper, ceramics, cotton, and noncritical plastics taking the place of metals. The little lead soldiers of yesterday are going down to the sea in the batteries and ballast of submarines. The case of the safety razor offers another homely example of how substitute materials can take the place of more critical metals. The new "victory razor" has a zinc cap and guard and a plastic handle. It contains no brass, a scarce material. One-sixth of a pound of brass was used in many of the 10 million safety razors manufactured in 1941. By substituting zinc for brass in our razors, we shall have 30 million more .30 caliber cartridges to shoot at the Japs and Nazis.

Simplification is a conservation measure aimed at reducing the number of styles, sizes, designs, and varieties of manufactured products as well as cutting out their frills and furbelows. This has been a voluntary effort on the part of most industries, but it can be backed by legal decree if necessary. Simplification

cuts down inventories of materials that can be put to more essential uses. Thanks to simplification practices, we have four shades of women's stockings instead of 75, thus conserving dyestuff chemicals. Cuffless trousers save wool. Fewer sizes and shapes of bolts and nuts mean metal available for more tanks and guns.

The Specifications Branch of the Conservation Division reviews Government purchase specifications with an eye to revising them in the interest of saving war-precious materials for more vital uses. It has prepared a list of almost 200 Federal emergency specifications designed to make critical materials go farther. In revised specifications for the construction of bridges, for example, temporary wooden panels between concrete posts may be used on bridge rails in place of steel—wood or stone may be employed in place of wire cable or metal plate on guard railings.

Conservation for war is no idle phrase. It has one set of applications in industry, another at home. Because we need rubber and explosives for our war machine, we must be willing to change our habits of auto-driving and sugar consumption. To industry the keynote of conservation is adaptability—simplify, substitute, salvage. To the individual, the watchwords of conservation are: save and sacrifice. In our victory drive, conservation is both a necessity and an opportunity.

PRODUCTION FOR WAR

It was the need for guns in quantity which led many years ago to the principle of manufacturing interchangeable parts—the principle of mass production.

Eli Whitney, the inventor of the cotton gin, found that he could gain speed in the manufacture of rifles by taking care to see that each operation on each part was identical—each barrel cut to the same length, turned to the same circumference, bored to the same caliber.

He fashioned each hammer, each trigger, and each stock to exact dimensions. In this way he was able to make separate parts in quantity and produce his rifles in volume lots.

Since that time, American ingenuity has applied the principle of mass production to countless items which have given this nation the highest standard of living in the world.

Now, we have turned our mass production methods to the manufacture of guns and tanks, ships and planes. I want to tell you briefly about the production problems involved in each of these war products. I know you understand why production figures cannot be made public.

Into the building of a bomber go more than 100,000 man-hours of work. There are more than 30,000 different parts and, counting duplicates, there are several hundred thousand separate pieces of metal. The engines themselves are made of 8,000 separate pieces of metal, each of which must be machined on machine tools.

The demand for accuracy can best be illustrated by saying that the carburetor of a large airplane engine is a more complicated bit of engineering than the entire engine of your automobile—that one cylinder unit develops as much horsepower as an eight-cylinder automobile.

In the last war, airplane engines had to be overhauled every 50 hours. Today, because their vital parts are machined to within a few ten-thousandths of an inch, they can go 600 hours at a stretch. These airplanes are being made in such numbers that the United States will have the largest and the finest air force in the world.

Intensive production of military aircraft was not started in the United States until European nations looked to us for help to overcome the lead taken by the Axis. In 1938—the year of Munich—our aircraft plants were producing about 100 military planes a month. Then France placed an unprecedented order for 200 pursuit planes. Britain followed, and France doubled its order; and by 1939, the 36,000 shop employees of the industry were building warplanes at the rate of 200 a month.

Since then, thousands of newly trained men and women have joined the veteran mechanics from other industries who have brought to plane production the skill to shape pieces of metal. Many of their old familiar machine tools have been adapted to this work, and many new ones have had to be built because tolerances unheard of in other industries are everyday measurements in aircraft plants. Men and machines were to do a job that never had been done before: make quantity production possible for an industry that had been handbuilding its product.

As new facilities came into production and old ones gained new skills, the aircraft industry added to its fast-growing family plants that once made automobiles and bodies, household refrigerators, hardware, hydraulic control equipment, pneumatic tools, electric generating equipment, electrical equipment, rubber products, elevators, pumps, and railroad cars. Hundreds of subcontractors feed these plants the thousands of gadgets that go into a modern fighting plane.

No less important and complicated than our production of planes is our production of ships.

The biggest, most complex single job in solid metal since man began to work with metal thousands of years ago is the building of a large ship. It takes approximately 3 years to build a battleship. Into the building of a Liberty Ship—an emergency cargo vessel stripped of frills and standardized for rapid production—go some 500,000 man-hours.

The final assembly station in the building of a ship is the shipway. It is here that all the parts are built into a whole. Assembly is the big part of the job.

But not the whole job. For generators and turbines must be built. Giant shafts must be turned. Propellers must be forged and machined. Tons of plate must be cut, shaped, and scarfed. All of this work is done in machine shops, some in the shipyard itself, some outside. But wherever it is done, it is a job for machine tools.

Making gigantic parts fit to a thousandth part of an inch is just about the hardest job in building a ship. Some of the gears that go into an engine have to be cut in air-conditioned rooms, since the pieces of metal from which they are made are so large that change of a few degrees in temperature will cause them to contract or expand enough to throw measurements off balance.

Nearly all of the facilities now making propellant equipment for ships are either new or converted from some landlubber industry. Electrical machinery plants are building turbines, plumbing and heating supply plants are making valves and shafts. From dozens of foundries are coming heavy castings to be turned into rings and sleeves by pump makers, marble cutters, and other craftsmen not afraid of heavy work and fine tolerances.

Concentration in the merchant shipping program is on the 416-foot Liberties. Each one delivered adds 10,500 deadweight tons to America's merchant marine. Others in the program include 3 main types of standard cargo vessels, ranging up to 12,600 tons; 2 types of large tankers, averaging about 16,500 tons; troop ships, smaller cargo ships, barges, tugs, and the like.

Many of the problems involved in shipbuilding are similar to those which have had to be solved to get our production of tanks into high gear. But mass production of tanks presents its own peculiar problems.

Pound-for-pound, American tanks surpass similar types in mobility and mechanical reliability. Hard-hitting, tough, capable of outrunning and outlasting other models, American tanks didn't just happen to be good. Superiority was built into them by hundreds of precision tools. Each part is made to exact measurements and machine tools used to make them are of a special nature and size.

Thirty to fifty percent of the weight of any tank is armor plate. To build a tank, hard thick steel that cannot be pierced by a rifle or machine gun bullet must be pressed, drilled, turned, reamed, and milled to exact dimensions. Into a tank go steel, nickel, brass, copper, aluminum, rubber, leather, glass, cotton, plastic, tin, lead, and petroleum products. In its skeleton are rolled plates, castings, forgings, rivets, bolts, wire, tubing, ball and roller bearings, gears, electric motors, instruments, batteries, and valves.

In a light tank are 14,000 individual pieces; in a medium tank, 25,000; in a heavy tank, 40,000 pieces that must be machined, subassembled, and assembled. Many of the metal parts must be machined on boring mills, radial drilling machines, milling machines, and similar tools of much larger size than found in ordinary shops. The turret casting alone is as heavy as the average automobile. Armor castings and forgings are so tough that tungsten-carbide tools have to be used in nearly all turning and boring operations. Cutters of high-speed steel containing a high cobalt content must be used in milling and similar operations.

During the last war we built a total of 64 light tanks. And they were *light* tanks—they weighed only 7½ tons. The vehicles we call light tanks today are nearly twice as heavy as those old ones.

Back in those days we called 30-ton tanks "heavies." Today we call vehicles of this weight "mediums." Our modern heavy tank weighs around 56 tons.

In the 15 years following the World War, 30 tanks were built in the United States. Meanwhile all of the World War models had become obsolete and by the time war broke out again in Europe the Army had in service only a few light tanks and a small number of 18-ton tanks

The need for modern mechanized fighting equipment, so forcefully demonstrated by the armored forces abroad, put an end to this slow, tedious production method. American industry was asked to produce in great numbers a vehicle that is not a tractor, a truck, or a locomotive. It is something in between, with a nature and a function all its own. Joining in the program to produce this distant cousin of their civilian products are the locomotive, automotive, and farm-equipment industries. Helping them are plants that once made railroad

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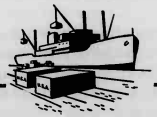
cars, automobile and trailer bodies, automobile motors, diesel engines, airplane motors, tractors, oil-well drilling equipment, type foundry equipment, shoe machines, compressed air equipment. Together they created a new industry to build monsters that cost $1 a pound and weigh up to 112,000 pounds.

The fourth weapon in which we are especially interested is the antiaircraft gun, which is, in fact, much more than a gun. It is a unit made up of four main sections: the gun itself, the recoil mechanism, the carriage and mount, and the fire-control equipment. The complexity of manufacture is indicated by the wide variety of companies now making them. Plants turning out parts for antiaircraft guns include those that normally make agricultural machinery, fire arms, automobiles, optical instruments, electrical appliances, oil burners, tires, sound reproducers, sewing machines, textile machinery, cameras, surveying instruments, elevators, printing presses, pumps, safes, and other machinery with movable heavy parts.

The gears and surfaces and moving parts that make up an antiaircraft gun must be perfect to within one ten-thousandth of an inch in some instances. Many tools capable of such close tolerances are being built in machine shops but, even under ideal conditions, it takes months to complete the more complex ones. To get enough for the accelerated program it was necessary to convert large numbers of tools and to create an entirely new industry. The new guns had to be built by companies new to gun building.

Even in the hands of experienced ordnance men an antiaircraft gun is no snap to make. It must send projectiles as far as the substratosphere at targets comparatively tiny, moving 300 miles an hour or faster. Firing must be rapid and extremely accurate, because planes are often within range for only a few seconds. Perfection must be built into the gun so that it functions flawlessly and automatically.

Our present models are the result of continuous studies by the ordnance department of the Army and Navy and the experience gained from the use of antiaircraft weapons during the early stages of the present war abroad.



MATERIALS FOR WAR

Raw materials, more than any other factor in the production program, are America's key to victory. Our clear superiority in natural resources gives us a potential strength far in excess of the Axis nations.

Our job now is to see how rapidly this country can translate her products of mine, farm, and factory into the finished instruments of war.

The United States produces nearly half the world's supply of raw materials, but we normally consume as much as the rest of the world combined.

We produce a third of the world's iron ore, more than 40 percent of its iron and steel, 25 percent of its coal, and two-thirds of its oil. From our mines come 37 percent of the copper, 29 percent of the zinc, and 24 percent of the lead in the world.

Our neighbors in the Western Hemisphere provide us with additional stores of these basic materials, and are sources of others that we lack entirely. Canada produces 85 percent of the world's nickel, as well as many other vital metals. Chile sends us large quantities of copper. Brazil supplies all our quartz crystals. Argentina is a tremendous source of hides. Bolivia is sending us tin ore. Sixty percent of our bauxite, from which aluminum is derived, comes from Dutch Guiana. Mexico currently is supplying us with mercury. In these and many materials of less importance, we are well off, thanks to our friends north and south of the border.

So much for the credit side of the ledger. On the debit side, we are largely dependent upon other parts of the world for tin, rubber, hemp, chromite, tungsten, mica splittings, graphite, burlap, jute, palm and coconut oils, manganese, cork, asbestos,

cadmium, and a score of lesser known materials that we can do without if we have to.

Immense as our stores are of the vital materials for war, they are not enough for our present purposes. So we are now engaged in a fourfold effort to increase our supplies of all vital materials that feed the war production machine.

The steps being taken are these:

First: We are increasing our domestic production by Government subsidy and by private capital; and by urging adoption of the 160-hour week in key industries.

Second: We are increasing our imports from all parts of the world where imports are possible, and encouraging increased production in all areas to which our shipping has access.

Third: We are limiting civilian use of scarce materials.

Fourth: We are encouraging substitution of more plentiful materials for those which are scarce, and we are encouraging conservation of available supplies in every way possible.

Our steel capacity, which early in 1942 was 86 million ingot tons annually, will become well over 90 millions when the steel expansion program is completed. This includes an increase of about 3 million tons being financed by private capital.

In addition, a vast increase in pig iron capacity is under way, to relieve the shortage in iron and steel scrap caused by the unprecedented pace at which the steel industry has been operating.

The most important material for war, next to steel, is aluminum. Our 1939 primary production of 328 million pounds was adequate for all civilian purposes but did not begin to fill the bill when we started to produce war planes in quantity. So we stepped it up in 1941, to about 600 billion.

Then we were faced with a greatly expanded heavy bomber program. Bombers need 30,000 pounds of aluminum per ship, compared to 5,000 pounds for a fighter. Result: during 1942 our aluminum output is being doubled.

Magnesium is aluminum's twin in airplane production. Primary production in 1941 was about 33 million pounds. The goal fixed for 1942 is five times as much.

These three—steel, aluminum, and magnesium—are materials concerning which our principal problem was the increasing of manufacturing facilities. In most of the other vital materials

the problem has been one of seeking new sources and developing to the limit our present resources.

This is true of copper, for example. Unfortunately, we have no known large deposits of high-grade copper not now being worked. Yet 1942 plans call for production or importation of 1,800,000 tons or more. It was believed this could be accomplished by working available sources to the limit, increasing the work week in the copper mining industry to 160 hours where possible, increasing imports from Chile by approximately 150,000 tons over the half-million tons previously scheduled, and by paying a bonus price for high-cost copper production from low-grade ores.

Second only in importance to these basic metals are the many alloying metals used to toughen steel. They are almost as vital to war production as steel itself.

Most important of these are nickel, chromium, tungsten, manganese, vanadium, cobalt, molybdenum, and silicon. There are many others.

Supplies of most of them are limited. In 1941 we consumed two-thirds of the world supply of nickel for instance, and could have used more. Only molybdenum and silicon are found in plentiful quantities in this country.

Chromium, tungsten, and manganese come primarily from areas cut off by war in the Pacific. This country has low-grade deposits of these ores, which now are being worked under various forms of Government subsidy. South American production has been stimulated. Arrangements have been made for increased imports from other parts of the world, notably Africa, and, of course, we have substantial stockpiles in reserve.

The other best known materials we get from abroad are cork, tin, rubber, and hemp. Cork comes from Spain and Portugal; tin, rubber, and hemp from the Far East.

Ordinarily we use about 100,000 tons of tin a year, 75 percent for tin cans. All of it, practically, comes from Malaya and the Netherlands Indies. The strictest kind of conservation of tin is necessary under present circumstances and the outlook is for widespread substitution of other forms of packaging.

Rubber, 73 percent of which is used for tires, is a parallel case. The Far East is the only source in the world for the 600,000 tons of natural rubber we need annually. Tire conserva-

tion and rationing are absolutely necessary if we are to have enough for our Army on wheels. While we have a huge synthetic rubber program under way, it will not solve our immediate problems.

Lead and zinc, also important in our arsenal, are produced in quantities sufficient both for war needs and for essential civilian uses. Conservation will be necessary, but there is no acute shortage for our military machine.

The man-in-the-street is helping—indirectly—to build up our raw material supply. When John Citizen does without a new automobile he contributes steel, copper, rubber, and other materials that will be used to defeat the Axis powers. When Mrs. Citizen prepares fresh vegetables instead of opening a can she is saving tin in which to pack food for the armies that will defeat Hitler.

All in all, every scrap of metal, every piece of paper, every bit of rubber is of vital importance in this mightiest of wars. We must produce all we can, save all we can, and work as hard as we can to keep democracy moving forward in a war-torn world.

BUILDING THE SHIPS

Success of the United Nations in the war depends heavily on the shipbuilders of the United States. The American merchant marine must maintain the supply lines to every fighting front.

Our ship construction program is the largest in history. Our effort in World War I was slight compared to the present program. The number of ships delivered during 1917 was 135, totaling 985,400 deadweight tons. In 1918, when our participation in the war was at its height, 440 vessels of 2,720,123 deadweight tons went into the service. In 1919, after the war was over, we reached our top production, 724 vessels aggregating 5,051,759 deadweight tons.

Now we look at the program which had been laid out early in 1942:

In the 2-year period ending December 31, 1943, we will send down our ways at least 2,300 oceangoing merchant ships, aggregating 23 million deadweight tons. In addition, 700 other craft of smaller types will be commissioned in our merchant marine.

Our program began slowly and from practically a dead start. In the 15-year period between 1922 and 1937 the total output of American shipyards—other than tankers—was *two* oceangoing cargo vessels. In 1936, when the Government set up the United States Maritime Commission, there were but 10 shipyards with 46 ways in the United States capable of producing oceangoing vessels 400 feet or longer. Half of those ways were making war ships; many of the others were idle.

In 1937, the Government program to build 50 merchant ships a year over a 10-year period was approved. In 1939, after the invasion of Poland, that program was doubled. And in 1940, as the world-wide conflagration edged closer to our shores, the program was doubled again. In January 1941, when the prospect for the democracies was black indeed, the goal was put at 400 ships a year, and our shipyards increased to 18, with 70 ways for oceangoing ships. Production was concentrated on the Liberty ship—or the emergency cargo vessel—not the fastest or most efficient boat but one that could be turned out in mass production.

The emergency shipbuilding program began to mushroom after Pearl Harbor. More shipyards were authorized; existing yards were expanded. Production schedules were speeded up, until, on April 2 of this year, the Maritime Commission announced that contracts had been let for all of the 2,300 ships authorized 2 months earlier for construction by the end of 1943. The authorizations for new Government-financed shipyards were increased to 17. A 50-million-dollar expansion of turbine and gear facilities also had been authorized; and an extensive program for increase of production of engines for Liberty ships had been adopted.

The time from keel-laying of a Liberty ship to delivery into service was cut from 6 months to 105 days, and the prospect arose that this would be cut further, to approximately 90 days.

On May 1, 1942, we had 60 shipyards with over 300 ways producing ships, mostly of more than 10,000 deadweight tons. In addition some coastline yards and yards on the Great Lakes were constructing other types of vessels just as vital to the war effort.

Three-quarters of a million workers were employed on the shipbuilding job, and the number was constantly increasing. Training schools turned out thousands of trained workers each month. About a million workers were producing materials and parts for ships.

At its peak, the shipbuilding program was expected to require about 2 million men and women workers.

In May 1942 we were turning out 2 ships a day. In December it had been 1 a day. By the end of 1942 the schedules called for 3 ships a day. The December schedule alone asked

for a million deadweight tons, virtually the amount that was put into operation in all of 1941.

To recapitulate: In 1940 we turned out 53 ships; in 1941, 105 ships; and early this year we set our sights for 800 ships in 1942, 1,500 in 1943.

On February 7, 1942, the President set up the War Shipping Administration "to assure the most effective utilization of the shipping of the United States for the successful prosecution of the war." The WSA was given full authority to control the operations, purchase, charter, requisition, and use of all our merchant fleet. It was assigned four major tasks:

1. Transportation and maintenance of American expeditionary forces.

2. Supplying the United Nations with war materials and Lend-Lease goods.

3. Importation of strategic raw materials.

4. Maintenance of the national economy of all countries in the Western Hemisphere.

Compared to our present transportation problem the 3,000-mile shuttle service to Europe in World War I was short. Australia is 10,000 miles away, at least a 40-day trip for a 10-knot-an-hour freighter. To Libya around the southern tip of Africa is 12,000 miles. Around the North Cape to Russia is 4,000 miles.

Putting every ship to essential use, the War Shipping Administration has converted sugar-carrying ships to hauling munitions. Tankers that formerly carried gasoline and fuel to the East Coast now carry airplane gasoline to fliers in Australia. Manganese, ore, and nitrates—instead of coffee—are the cargoes of ships from South America.

America is carrying the goods, and it is supplying the ships. The job is a big one, but our shipyards and workers and shipping lines are equal to it. The productive genius of American shipbuilders, the administrative ability of our shipping operators and governmental authority, and the skill and courage of our merchant sailors will maintain the lifelines of democracy.

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MOVING THE ARMAMENTS: TRANSPORTATION

This war, more than any other war in history, is a battle of transportation. Communication lines must be kept open, and transport facilities must be available whenever and wherever they are needed. The army which can maintain its supply routes most efficiently, which can keep food and munitions and armaments rolling to the front in a never-ending stream, is the army which will win.

This is not a front-yard fight. The war is being waged on fronts thousands of miles away. To reach those fronts our materials and machines of battle must travel over extraordinarily circuitous routes, sometimes thousands of miles longer than the normal routes, because of the contingencies of war. And before ammunition and food and clothing and other supplies for our troops and our allies can leave our shores, they must be shipped from the centers of production to the ports of embarkation.

That, in turn, puts an unprecedented strain on our communication lines along the home front. Maintenance of these life lines at home is just as important to the success of the fight as maintenance of the supply routes which lead from our shores to the enemy.

What are these life lines?

They are the same routes which we use in our peacetime activities to carry food from our farms, machines from our factories, radios and automobiles and refrigerators from our giant assembly points. They are the routes, also, that we use in traveling over the great expanse of our country, whether we go by rail, by highway, by water, or by air.

Today those lines have been converted to the one objective of winning the war. Just as we now use our automobile assembly lines to make tanks and planes and guns, so we now use the transport system of this country to carry the war equipment and troops and other essential supplies to their destinations.

Traffic that goes over these lines has reached record-breaking proportions. Nothwithstanding the record figures of 1941, schedules called for much more during 1942, still more in 1943. One reason for this is the great diversion of traffic from water to rail. Take oil. Not long ago, tank cars were almost a drug on the market. In November 1941 they carried about 70,000 barrels of oil a day to the Eastern Seaboard. Five months later the figure was over 500,000 barrels.

The President set up the Office of Defense Transportation to cope with this overloading of our facilities—"to assure maximum utilization of the Domestic transportation facilities of the Nation for the successful prosecution of the war."

To achieve that goal, the ODT coordinates and directs the storage and movement of goods and munitions, conserves commercial-vehicle facilities, coordinates transits by sea and land and internal waterway, sees to it that transport workers are to be had, negotiates freight rates for the Government, and facilitates passenger traffic in all metropolitan centers, at war plants, and other congested points.

The ODT is made up of the following Divisions: Railway Transport, Motor Transport of Coastwise and Intercoastal Transport, Inland Waterway Transport, Traffic Movement, Local Transport, Storage, Transport Personnel, and Rates.

To supplement and strengthen the efforts of these Divisions, there are certain things that you, as a private citizen and as an automobile owner, can do.

The United States is served by a fleet of 33 million highway automotive vehicles. We are dependent on that fleet of vehicles. All of these highway vehicles use rubber tires. They cannot operate without them. But the war has cut off our supply of crude rubber, and it will take at least 3 years to develop an adequate new supply. Until then, there will be no rubber for the overwhelming majority of our civilian cars and trucks.

That means we must conserve what we have. We must save every ounce of that tremendous national stockpile of rubber which we have on our cars and trucks. We must avoid high

speed, careless driving, improper tire care. You know the rules for saving your tires. They have been repeated time and time again both by Government and by business.

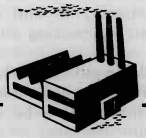
In addition we can stagger hours to cut down on heavy traffic, and set up a system of group riding in our community in getting back and forth to work, in shopping, in taking the children to school.

Under such a plan, for example, one week Mr. Smith will pick up four or five of his fellow workers in the morning and carry them back in the evening. The next week Smith's car will stay at home and Jones' car will take its place. And so on, right down the block.

This is one way—and an important way—of keeping the supply lines open and keeping our national transport lines operating at full efficiency.

Come what may, the railroads, the seaways, the highways, and the airways will keep functioning, ready to speed the machines of war to the front lines. Our transport lines rank second only to the production plants themselves in getting guns and planes and tanks into the hands of our fighting men. Nothing is being left undone to keep them at peak efficiency.

If your train is late, if you can't get a nonessential shipment through, if you aren't able to make that 1,000-mile vacation trip this year, don't complain about it. Instead, remember that you are doing your bit to keep the supplies rolling. That is small sacrifice compared to the stakes we are fighting for.



SUBCONTRACTING FOR VICTORY

Few of our manufacturing plants can turn out a battleship or a flying fortress, but nearly any of them can fabricate at least one of the thousands of parts in the great war machine. For speed in manufacture, and to enlist all facilities for production, the Government encourages the "prime" contractors to sublet parts of the work. This business of ordering "bits and pieces" and subassemblies from outsiders is subcontracting.

The device is employed much more widely now than normally. The peacetime manufacturer, to keep his men and machines busy, often did work in his own plant that might have been done outside. But the need for fast deliveries is so great in this war that he does not have time to do all the work himself. He orders parts and subassemblies from other firms, and our total production goes up.

There are many reasons why the subcontracting system is a vital part of the war effort, but the basic one is this:

Germany and Japan entered the war with a head start of at least six years in the manufacture of munitions. Since the fall of France, the United States has built and equipped many special-purpose plants to turn out arms.

But these special-purpose plants are not enough. If we rely on them alone, thousands of young Americans will die who should live to see the victorious peace. With the Axis using its accumulated arms in a desperate drive for a quick knockout, the existing machines of every suitable factory, large and small, are needed for war production.

Some of those who adopted the subcontract system early in the game found that unit costs were increased at first, and

initial delays encountered. They learned it was necessary to give subcontractors engineering and supervisory assistance. This strained their own engineering and supervisory forces to the limit.

But similar difficulties would have been encountered if the manufacturers had set up new departments in their own plants to handle the work that had to be done. Time was at a premium. It could not be spent in building and equipping such departments.

As Chairman Donald M. Nelson of the War Production Board said:

"With the future of our country at stake, with our Armed Forces in immediate need of more weapons, imagination and boldness are called for on the industrial front. Increased subcontracting may swing the balance.

"Production lines are battle lines. Let's use all the production lines we've got."

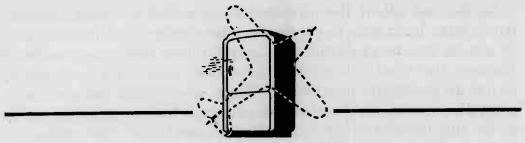
To bring prime contractor and subcontractor together, the War Production Board operates field offices in 120 cities throughout the United States. These offices do not negotiate subcontracts; they merely bring the parties together, serving as a sort of get-together agency in the industrial field. A list of these offices may be had from the Division of Information, War Production Board, Washington, D. C.

One of the principal activities of the field offices and of their Washington headquarters is to help prime contractors find plants that are equipped with scarce or "critical" machines. When a field office receives an inquiry as to where such machines can be found, it first searches its own records and canvasses local plants. If it fails to turn up the needed machines locally, the office relays the inquiry to neighboring offices and, in turn, to Washington. Literally thousands of badly needed facilities have been turned up in this manner, and put to work under subcontracts.

If you own a plant that can be converted to war production, register at the nearest WPB field office. Your facilities will then be on record as available for war work. But don't sit back and let Washington do the whole job. Go to the prime contract holders in your area and let them know what you have; many a subcontract is awarded that way.

So far, not all of the qualified firms eager to obtain subcontracts have been able to get them. One reason for their inability to obtain war work in the past was the fact that, prior to Pearl Harbor, the total volume of war orders was not great enough to use all production facilities. Since we entered the war, however, the size of the production program has been going up by leaps and bounds toward the ultimate goal—our maximum capacity. Early in 1942, the amount authorized by Congress to prosecute the war totalled about 160 billion dollars.

A sample survey of several prime contractors several months ago showed that they were farming out an average of 25 percent of their orders. One automobile company subcontracted 90 percent of a large order. Qualified firms which have failed thus far to obtain subcontracts are advised to canvass the prime contractors again—and again. One hundred percent of possible production is the size of our war program.



CONVERSION

Everybody knows that the United States has the greatest capacity in the world to manufacture an almost limitless variety of products. The proof can be found by just looking around us. At the rush hour, the streets of our great metropolitan centers are lined with automobiles from curb to curb. Phonographs, radios, refrigerators, vacuum cleaners—all the comforts and conveniences of our modern civilization are to be found in millions of homes, on the farm, in villages, in our cities and towns. In short, the country has enormous resources of raw materials and matchless industrial plants to turn these materials into finished goods.

But we could not fight Germany and Japan with ice boxes and automobiles; our tremendous industrial power had to be shifted from peacetime production to war purposes.

American production *is* being converted from the uses of peace to those of war, and we Americans must do without many new gadgets and conveniences so that our fighting men may have adequate arms.

Automobile manufacturers—and one of them alone can fabricate more metal than all Japan—are making tank engines and plane engines and antiaircraft guns. Machines to make vacuum cleaners have been shifted to making weapons. Our great textile mills are turning out material for uniforms and blankets, and our canners are packing food for the Army and Navy and the other United Nations.

Strictly speaking, perhaps, conversion means changing over machines to make products other than their normal ones; broadly speaking, however, it also involves conversion of peacetime products to war uses.

Many of our factories were converted, partially or entirely, before the Japanese attacked us. The bombs that fell on Pearl Harbor blew up "business as usual" in other plants. All-out conversion has been our goal since then.

The figures speak. In July 1941, the United States had provided $31,768,000,000 for defense. That sum is beyond the mental grasp of any but an Einstein. But multiply it by five and it still falls short of the sum now committed to war.

That incalculable sum contemplates the fullest practicable conversion of our industrial machine.

As to production, it was confidently forecast well along in 1942 that we would produce 45 billion dollars' worth of munitions during the year—more than the total national income in 1932, the low point in the depression.

Prior to Pearl Harbor, the automobile industry, greatest reservoir of machine tools in the world, had converted about 25 percent of its facilities to the production of military vehicles and other war products. With our Far Eastern sources of rubber for tires cut off, the Government stopped all passenger car production, and conversion of the industry's remaining facilities began. Four months—120 days—after Pearl Harbor, Chairman Donald M. Nelson, of the War Production Board, was able to say:

"The conversion of the automobile industry has been far beyond my expectations. I think those people have really done a great job in getting ready for war production, with the result that some of the unemployment figures which were given as estimates in Detroit are not coming true."

In referring to unemployment, Mr. Nelson touched upon one of the most difficult problems involved in conversion. When a plant changes products, workers as well as machines have to be converted. They must be taught to do new things with old machines, and in many cases to operate new machines installed to supplement old facilities.

To help qualified manufacturers join in the war effort, the War Production Board has established 120 field offices throughout the country. These guide factory owners to Government procurement agencies and to war contractors who have work that they might do. Industry branches of the WPB in Washington, working with the Army, Navy, Maritime Commission,

and Procurement Division of the Treasury, also advise and assist manufacturers.

Once orders are placed, the speed with which all-out conversion is completed depends primarily upon plant managers and employees.

Together, in peace, management and labor made American industry the world's greatest and most efficient.

Together, in war, they will match and surpass the accumulated arms of the Axis.

GETTING A CONTRACT

As American production really gets rolling, small and medium-sized manufacturers are becoming increasingly important in the war effort. With civilian production cut off and with conversion the order of the day, such manufacturers may logically ask: "How do we go about getting war work?"

The biggest mistake any manufacturer can make is to assume he hasn't a chance of getting war contracts. There are things he can do to get them. The War Production Board has set up machinery to help him. By making full use of this machinery and by using a little determination and ingenuity, many manufacturers will bridge the gap—often a wide one—between peacetime and war production.

The first step of any manufacturer who wants war work is to make a complete survey of his facilities. This survey should begin with the firm's business record and should include a description of normal products made in the plant, the experience of managerial and supervisory personnel, previous war production experience, a financial statement, and names of past and present customers for reference.

The manufacturer should pay particular attention to his labor supply. In the survey he should list the number of his factory employees, their skills, peak employment of the plant for one, two, and three shifts, a description of the available labor supply and the demand for it, and a brief analysis of local and nearby wage rates.

Next, he should take stock of the plant and its equipment, describing location, transportation facilities, available water and power facilities, and similar facts with some bearing on production capacity.

Complete layout plans—accompanied by photographs—should be made for each section of the plant. Finally, a list of all tools should be compiled in which the type, make, age, size, and serial number, as well as the tolerances usually followed, are included.

It is obvious that the survey must be accurate and complete if it is to serve as a guide both to himself and to those from whom the manufacturer must get his contracts.

His survey will do him the most good at the following places:

1. The nearest field office of the War Production Board, probably in his district. (There are 120 offices scattered throughout the country.) Here a manufacturer can learn what war items are needed and he can get an idea of which he can make. He can study blueprints and samples. At some offices he will see exhibits of needed "bits and pieces," in which prime contractors show actual parts and subassemblies they may want to farm out. Since the offices serve as clearinghouses of information for Government procurement offices and prime contractors, the manufacturer should keep in close touch with the office serving his district.

2. The Army's district procurement offices. By writing to the Office of the Under Secretary of the War Department in Washington, the manufacturer can get a list of the various procurement offices, the type of products they buy, and the procedure to be followed in getting orders.

3. The Navy's Bureau of Supplies and Accounts. A booklet, "Selling to the Navy," may be obtained by writing the Bureau at the Navy Department, Washington.

4. Local prime contractors. Information about these may be obtained by bona fide manufacturers at the WPB field offices.

5. By pooling facilities, manufacturers can handle subcontracts beyond the capacity of any one of the plants making up the pool.

There is no single formula to bring war work to all manufacturers, however eager they are to get it, with whatever zeal they pursue it. Harnessing the capacity of small, medium-sized,

and even large factories is one of the toughest production problems America faces. There are many complicating factors.

One is the extreme urgency of stepping up production immediately. It has been necessary in the past to place contracts with firms which were prepared to fill them—those which were already in war work, but whose capacity wasn't being utilized to the utmost.

Another complicating factor is the limited variety of jobs many of the firms now without war contracts can do.

One of the most important factors is the simple truth that until the attack on Pearl Harbor America was not spending enough money on defense to employ the maximum capacity of all its industries.

Since December 7, 1941, Congress has appropriated additional billions of dollars to cover the cost of unprecedented production of armament. Prime contracts have been placed with mass production industries as fast as committees representing them could be called together for conferences with the War Production Board's Division of Industry Operations and the Government Procurement Agencies. To speed up the process, most contracts are now being negotiated rather than let after competitive bidding.

The point is that firms receiving prime contracts will need thousands of subcontractors to help them meet early delivery dates.

One fact that needs to be faced is that some large plants were slow in the past to subcontract work that could be handled by smaller firms. They wanted to do the whole job themselves. They will have to spread subcontracting to meet production deadlines.

It is also true that many small manufacturers have been slow to realize that getting war work requires the same resourcefulness and imagination they showed in developing their own enterprises.

THE WAR PRODUCTION DRIVE

America is fighting ahead in the battle of production. We haven't won it yet. There are still men living tonight who will be dead when another year rolls around because machines aren't rolling off some production line fast enough or because some shift is piddling along with too few men.

A poorly manned second shift, an idle third shift—these mean men dead in African deserts, in Russian swamps, in Indian jungles. Dead because the guns, the ships, the tanks, and the planes didn't get to them on time!

We *are* on our way to victory in the battle of production. Tanks, guns, planes, and ships are pouring out of America's plants in increasing flood. One reason for the increase is the War Production Drive.

What is the War Production Drive?

It is an entirely voluntary plan whereby labor and management are getting together to increase production. The Drive was launched on February 27, 1942, when President Roosevelt wrote to Donald M. Nelson, chairman of the War Production Board:

"The months just ahead are the critical months of the war. Victory depends in large measure on the increased war production we are able to get from our factories and arsenals in the spring and summer of 1942. What has been done so far must be exceeded. This is total war. We are all under fire—soldiers and civilians alike. No one is a spectator, we are all belligerents. To win we must fight.

"The urgency of tomorrow must be felt in every shop and factory producing war goods, in every home, and on every

farm. Then we shall achieve the vigor of thought and cooperative action that carries a team to victory.

"I therefore direct you to take every possible step to raise production and to bring home to labor and management alike the supreme importance of war production this crucial Spring."

Mr. Nelson immediately called for the formation of labor-management committees in every war-contract plant in the United States to step up production.

His over-all plan for this step-up of production won the approval of Secretary of War Stimson, Secretary of the Navy Knox, and Admiral Land of the War Shipping Administration.

It called for the creation of joint labor-management committees in every plant. The management was to select its committeemen; the workers, theirs. Labor and management were to be represented equally. After appointing the necessary subcommittees, the labor-management committees were to take these steps:

1. Erect a production scoreboard.
2. Arrange for a study of plant efficiency.
3. Put up suggestion boxes and arrange for handling suggestions.
4. Set up bulletin boards and arrange for posting special communiques and other material.
5. Establish a method of production news distribution.
6. Establish a subcommittee on posters to be hung throughout the plant with the cooperation of WPB.
7. Start a slogan contest.
8. Spread the drive to subcontractors and trainees.

This basic plan was distributed to several thousand prime contractors, to labor unions, to the Army, Navy, and Maritime Commission, and to civic officials. The War Production Board arranged meetings in key cities and consultants explained the plan.

The plan had its critics. Some labor leaders suspected it was a stretch-out or speed-up scheme. Some saw in it a plot to turn American industry over to labor. But War Production Board consultants explained the plan, and labor and management went to work, sometimes enthusiastically, sometimes cautiously.

The chairman of the War Production Board said in his radio address of March 17, 1942, in discussing the plan:

"This is not designed to further the special interests of a group. It is not a scheme to promote company unions. It is not a device to add to or tear down power or position of any existing union. It does not interfere with bargaining machinery where it exists. It is not a management plan, a labor plan, or any other plan. It is a perfectly simple, straightforward effort to increase production."

Labor and management gave the plan a fair trial—and it is a success. Management is sitting down with labor, with representatives of AFL unions, of CIO unions, of unaffiliated unions, and of workers in unorganized plants.

They are organizing committees beyond the official plan; committees that go around to workers and say, "Here, Joe, you've got to stop playing around! You're slowing up the production line. You've got to come in ready to work every morning." Committees that say, "Boss, you've got to get better tools in here so that these men can do the job they're able to!" Committees that say, "Mrs. Bill, you've got to take better care of Bill's meals and his health. He's been absent too often this week and the boys in the Pacific need his help."

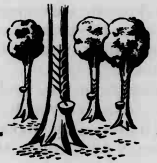
And they are finding faster ways of getting out the product. Workmen are writing slogans to galvanize entire plants to action. Hard-hitting mechanics are hitting harder. The production line is rolling faster.

The War Production Drive is no longer an experiment. Phillip Murray, head of CIO, has endorsed it; William Green, head of the AFL, has endorsed it. The National Association of Manufacturers has endorsed it. The Army, the Navy, and the Maritime Commission have endorsed it.

There has been one note of dissent. Paul Josef Goebbels doesn't like it. His shortwave radio from Berlin says so.

But the War Production Drive is on!

And when this total war is over and the victors are cited for merit, the awards for valor will go to the American soldier, sailor, and marine. And we may confidently anticipate another award: "For work, for production, beyond the call of duty—to American Management and Labor."



OUR STAKE IN THE PACIFIC

Unless we would accept as permanent the conditions of today, and resign ourselves and our children to militarism and a lower living standard in a world ruled by bandit nations, we must prevent Axis domination of the Orient.

For a long time, while China battled alone against Japanese invaders, many Americans took the attitude that it was none of their business. The Far East was a long way off, they said, and Japan would never bother us.

The majority of us felt that Japan's brutality was some of our concern, and we gave China loans and some other help. But we didn't feel strongly enough to go to war about it until Pearl Harbor woke us up.

Japan's treacherous attack made us realize what had been true all along: we can't live at peace while powerful international bandits are at large anywhere in the world. We can't live free lives while other nations that stand for freedom and civilization are being enslaved and organized against us.

That wasn't all Pearl Harbor drove home to us. With an awful shock, we realized how much we depended upon the Far East for vital raw materials.

Normally, we import from the Pacific area many raw materials not obtainable anywhere else in the world in the quantities we need.

We have large stockpiles of most of these essential raw materials, accumulated with foresight, and, with economy, they should supply our military needs till the sea-lanes are reopened or new sources developed. Besides tin and rubber,

they include alloys—chromite, manganese, and tungsten—for hardening steel, kapok for life-preservers, graphite to lubricate machines, mica for insulation, manila fiber for rope, tea, and pigs' bristles for brushes.

We produce practically no tin, and consume more than 100,000 tons per year, most of which came from Singapore and the Netherlands Indies. Tin makes tin-plate, chiefly for tin cans; glass is a heavy and fragile substitute, and silver to line cans is expensive and limited in supply. We must conserve and increase our tin stockpile. To that end, we are expanding our new Texas smelter to refine tin ore from Bolivia.

Of rubber we consume, in normal times, more than 600,000 tons per year. More than 90 percent of the crude came from the Orient, from countries now overrun by the Japanese. To stretch our stockpile to the limit, we are using about 30 percent reclaimed rubber. We have also undertaken a large synthetic rubber production program.

Of chromite, manganese and tungsten, to harden and toughen steel for armor-plate and armor-piercing projectiles, we need all we can get.

About one-third of our chromite came from the Philippines and New Caledonia, two-thirds from Africa, Turkey, Cuba. Our domestic deposits of chromite are now being worked but are low-grade. We have also low-grade manganese ores, but depend chiefly on imports from Brazil, Cuba, South Africa. Molybdenum, plentiful here, may be substituted for tungsten, and the War Production Board, by priority control, has encouraged this substitution, but tungsten alloy still remains most suitable for some military uses.

Of our tungsten we produce domestically about one-third. We are increasing our production and our importation from South America, but the larger part of our tungsten came to us from China.

Graphite is produced in Alabama, Texas, and Pennsylvania. Our imports from Madagascar and Ceylon are of higher grade, but loss of them would not seriously impair our military production.

Of mica, irreplaceable as an insulator of electricity, 90 percent comes from India, 10 percent from Madagascar. Our stockpile is large but not ample, and as yet we haven't the labor trained in splitting it, difficult and tedious work.

Manila fiber, for rope, comes exclusively from the Philippines. From the islands of the Orient too we get palm-oil—used in tin plating—and coconut oil to make glycerine. And from the Far East come mangrove bark—used in tanning—and sisal and burlap and jute, tapioca, antimony, cobalt, tung oil, copra, mahogany, camphor, nutmeg, and pepper.

American ingenuity and energy are finding substitutes and new sources for Far Eastern products, but the full restoration of our industry and normal way of life requires a free Pacific.

OUR STAKE TO THE SOUTH

The Americas are a natural unit, continuous in land surface from frozen North to frozen South, and bound together by a common devotion to freedom.

In this vast area are every variety of climate and diversity of terrain. The several hundred million inhabitants are of many races and vary widely in degree of civilization, yet they are one in mind and spirit. They all live of free choice under democratic government and subscribe to the same ethical code, with a decent respect for the rights of other peoples.

Upon the United States, strong in natural resources and industrial power, rests much of the responsibility for the common defense of this territory.

The economy of the Americas must be adjusted to war conditions and loss of overseas markets and sources of supply. To this end, the United States has nearly doubled its imports from Latin America, sending in return materials and manufactures formerly obtained abroad.

We are helping to revive and develop Latin American agriculture and industry. Our Department of Agriculture has produced disease-resistant rubber plants which may return to Brazil its great rubber industry of 40 years ago. We have granted priority ratings to many orders placed here by Latin America, making available machinery and equipment for Chilean copper mines and Brazilian steel mills.

Among our larger exports to Latin America are crude petroleum and petroleum products, chemicals, textiles, food and food products.

Through increased production, development of agriculture and industry, and diversion of trade, our hemisphere is becoming more self-sufficient. With few exceptions, which are being supplied by conservation of existing stocks, substitution, or development, a catalogue of inter-American trade lists all things needful in peace or war.

The United States produces one-third of the world's iron ore, 40 percent of the iron and steel, two-thirds of the oil, 40 percent of the copper, 29 percent of the zinc, 24 percent of the lead.

Canada is one of the largest producers of nickel, and is a large producer of copper and other minerals.

Argentina sends us wool, hides and skins, quebracho extract for tanning, flaxseed, canned beef, and cheese.

Bolivia sends directly now, to our new Texas smelter, the large production of tin ore that formerly went to England for smelting. Bolivia also supplies us antimony in growing quantity, replacing imports from China.

Brazil sends us most of our coffee. And cacao beans, castor beans, babassu nuts, cotton linters for explosives, manganese, quartz crystals, carnaubu wax, hides and skins.

Chile sends us copper to add to our own vast production for the war effort. And also much sodium nitrate.

Colombia exports coffee and bananas to us.

Cuba sends us sugar, a good part of all we import. And chromium and manganese, essential as steel alloys, also come from Cuba.

Ecuador sends us kapok, formerly brought to us from the Far East.

Mexico exports to us large and growing quantities of crude petroleum, copper, cattle, sisal hemp, lead, antimony, and zinc.

Uruguay sends wool, in quantity second only to Argentina.

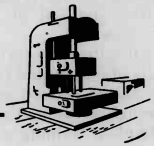
Latin American exports to us are fast increasing in quantity. Argentina and Uruguay sent us 85 million dollars' worth of wool and mohair in all 1940, and 60 million dollars' worth in the first half of 1941. From Chile alone we are now getting copper approximating in quantity our copper imports from all sources

in 1939; and Latin American exports to us of manganese ore, chromite, tungsten, antimony, and zinc have sharply increased.

Latin America supplied in peacetime the bulk of United States imports of antimony ore, beryllium and vanadium for alloys, babassu nuts and castor beans for oil, coffee, flaxseed, henequen (used as an industrial fiber), quartz crystal, quebracho extract for tanning, sodium nitrate for explosives and fertilizer, and sugar. And the countries to the south sent us large quantities of bauxite ore from which aluminum is derived, cacao beans, hides and skins. Canada supplied most of our nickel.

Wartime increases in our Latin-American imports have been chiefly of strategic materials and their substitutes, including rubber, tin, Manila hemp, jute, copra, palm oil, kapok, opium, manganese, chromite, graphite, and tungsten. We obtained most of these materials formerly from the Far East, South Africa, and Turkey. Other strategic materials imported increasingly from Latin America are copper, wool, hides, and skins.

The Western Hemisphere has not yet attained self-sufficiency but, through loyal cooperation, is steadily increasing its ability to stand alone if need be.



LABOR MOBILIZES

American workers were given a man-sized job to do in 1942. One plane every 8 minutes, a tank every 12 minutes, two 10,000-ton merchant vessels every day—together with warships, guns, shells, and countless other weapons.

Every week since Pearl Harbor something like 190,000 American workers, the equivalent of 12 American army divisions, have been going into war industry.

The war labor force that numbered about 6 million on December 7, 1941, had increased to 9 million on April 7, 1942, and was scheduled to rise to more than 17 million by December 31, 1942, building the planes, tanks, antiaircraft guns, and shipping called for by the President.

This mighty army of working men and women is the most productive ever mobilized. First, because Americans have outstanding skill and resourcefulness. Second, because as free men and women they are volunteers eager to make every working minute count toward destruction of the Axis. Third, because they man the machines of an industrial economy long geared to mass production, the only kind of production which can win a total war.

To attain our huge production goals in the shortest possible time, we must assign every available worker to the post for which he is best suited.

The President has entrusted this unprecedented job of labor mobilization to the War Manpower Commission. The Commission, through established Government agencies, is training and placing more men and women than has ever been done in such a short period. A program of training and placement, in-

augurated by the Federal Government through the schools and other agencies soon after the fall of France, has already produced tremendous results.

Here is what we did in less than 2 years:

In the 20 months of its operation the former Labor Division of the War Production Board trained some 3,450,000 persons outside of industry, through vocational and trade schools and engineering colleges. In-plant training methods were installed by the Training-Within-Industry Branch of the Labor Division in more than 3,200 war contracting concerns employing over 3,500,000 workers. A total of 53,000 lead men, foremen, and supervisors were trained to pass on their knowledge to new workers in some 2,000 war plants employing over 2,500,000. Each of these 53,000 new supervisors should train at least 10 war workers in the plant.

In the war manufacturing industries the percentage of skilled and semiskilled workers needed for efficient production is relatively high. It has been estimated that in most of the munitions manufacturing industries the relative proportions of workers, by degrees of skill, are as follows:

	Percent
Skilled workers	37
Semiskilled workers	38
Unskilled workers	25

The United States Employment Service lists 623 occupations important to the war effort and critical because of existing or potential labor shortages in those occupations. Of over 4 million registrants in its files in late Spring 1942, only 229,000 were classified as qualified in war production occupations. Approximately 100,000 of these were in the textile and construction industries. More than half of the 80 metal trades occupations showed labor shortages existing or anticipated. Other occupations in which there were shortages included aircraft sheet metal workers, aircraft riveters, aircraft inspectors, bending roll operators, shipbuilding layout men, and shipfitters.

The bottleneck in our labor forces is tightest in the supply of skilled workers. The most practical way to overcome skilled labor shortages is to utilize existing craftsmen at their best skill and upgrade other workers to take over operations requiring lesser skill normally performed by the skilled craftsmen. For example, a good machinist may be upgraded to become a tool

maker; a machine operator may take over work that a machinist does on a lathe; another machine operator may take over the work that a machinist does on a milling machine. Such upgrading and training have been done in many plants.

As another means of obtaining enough workers, each war contractor is urged to make the fullest possible use of the local labor supply. That is a fundamental part of our national labor policy.

Employers are hiring more and more women. Early in 1942, the most conservative estimates showed that at least 2 million women workers would be needed during the year.

Plant operators have been hiring more Negroes from the Nation's Negro population of 13 million.

Reports also disclose increased employment of the foreign-born, and racial, national, and religious minorities.

Throughout the emergency labor has had a voice in the many phases of defense and war production in which it was concerned, both through representation on the staffs of war agencies and through many advisory committees. This principle of labor representation is being carried over into the new War Manpower Commission with the establishment of a national labor advisory body to cooperate in the mobilization of working men and women.

LABOR'S CONTRIBUTION TO THE WAR

Even before Pearl Harbor, American labor knew that some day it would be called upon to help stop the dictators. Workers showed their fighting spirit on many an occasion. At Cleveland, Ohio, it took them only 5 days to repair a $2,250,000 defense plant swept by fire. On the west coast they cut the building time for 3,000 defense homes in half. At Corpus Christi, Tex., they pushed construction of the huge naval base ahead of schedule.

The Japanese bombs fell, and labor responded with increased effort.

Seven out of ten workers are putting in 48 to 60 hours per week. In the critical machine tool industry, labor puts in from 50 to 70 hours a week; in 4 out of 5 aircraft factories, 44 to 54 hours weekly. Nearly 70 percent of the nation's shipyard workers put in 46 to 52 hours weekly.

In the first 3 months of 1942, the man days lost by strikes were only six one-hundredths of 1 percent of the man days put into war production.

Labor has put aside some of its wage standards for the duration. On the west coast, shipyard workers agreed to give up double time for Sunday. The CIO and AFL offered to drop double time for Sunday when it was not a seventh day of work.

The output of war materials is many times that of a year ago. Records have been broken in producing steel. The battleship *Alabama* was built 9 months ahead of schedule. Bombers, fighters, and tanks are being assembled faster than ever before in America.

America's seagoing workers, members of seamen's unions, risk their lives again and again to carry war supplies and food

across the oceans to our battlelines and those of the other United Nations, and raw materials from other lands to the war plants of our country. Many have gone down with the ships. Those who survive have not hesitated to go to sea again.

Through the Labor Advisory Committees of the WPB's former Labor Division, which are continued by the new Labor Production Division of WPB, unions in the many industries have advanced proposals in regard to speeding conversion of the automotive, radio, refrigerator, washing machine, and textile industries.

After finishing a day's work at war production, workers have participated in other wartime activities. Unions have recruited thousands of volunteer blood donors from their members. They have bought and sent packages of needed articles to thousands of American boys in our armed forces. And while talking about bundles for Yanks, it's worth mentioning that the CIO shipped a lot of them to the 1,000 AFL construction workers who were with the Marines at Wake Island and are now prisoners of the Japs.

Early in 1942 it was estimated that union men and women would buy more than 3 billion dollars' worth of war bonds before the end of the year. Leaders of both the AFL and the CIO enlisted millions of workers in support of the plan to assign 10 percent of their pay envelopes to purchase of war bonds. One international union pledged enough bond purchases to build a battleship. Another union's bond campaign was expected to provide an aircraft carrier, a third union's goal was a light cruiser.

In many cases labor has made outright contributions of pay. In Washington, D. C., more than $130,000 was donated to local civilian defense when building tradesmen donated a day's pay each. Workers on the new Navy building at Arlington, Virginia, gave one and a half day's pay to the Navy Relief Society, while workers in a California plant gave a day's pay to the society and raised an additional $6,300.

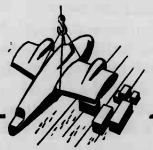
Labor has a spokesman in the new Labor Production Division, staffed largely by personnel from labor's ranks, and set up in the War Production Board.

Labor knows that every weapon we give to our military forces and those of our allies means another advance toward the

final victory of the United Nations, another blow struck against Axis tyranny and oppression.

One war worker spoke for millions of his fellows, when he declared:

"Dutch, British, Russians . . . We're fighting to keep our freedom and the right to live like human beings. The boys in the battlefields are doing their fighting in the front lines. It's up to us to back 'em up. We know the time of day it is and how late it is and we're going to keep 'em sliding—at top speed—until we have slid that paperhanging guy and the Japs into the junk heap."



LEND-LEASE FOR VICTORY

The other peoples of the United Nations who fight the Axis fight our enemies. In fighting for their own survival they fight for ours. Millions are fighting to hold the distant battlelines. If they could not carry on the fight, the road to the invasion of America would be open. The bases essential to the launching of offensives would be lost.

The purpose of the Lend-Lease Act was to sustain their fight. Its passage by Congress 9 months before Pearl Harbor was timely recognition that our own survival depends on defeat of the Axis powers. Through Lend-Lease our allies have been able to use against our enemies the planes and tanks and guns and ships we build. Lend-Lease has helped to keep the fight against the Axis on foreign soil. It has helped to hold the supply lines and build up bases abroad that now also serve our own forces. And, on the home front, Lend-Lease orders helped to speed up our own war production program before we were ourselves attacked.

The Lend-Lease Act gave the President power to provide weapons, materials, and services to all nations whose defense he found to be vital to our own. In all, counting the British Dominions and India separately, there are 41 Lend-Lease countries. All of the 20 American Republics are included.

The program for Lend-Lease Aid has become since Pearl Harbor an integral part of the overall United States war program. About one-third of all appropriations for war supplies have been made available for Lend-Lease purposes. Most of this Lend-Lease fund pays for supplies that may be allocated.

as military strategy dictates, either to our own forces or to those of the other United Nations.

Thus, Lend-Lease supplies flow in effect into a United Nations pool to which our allies also contribute to the extent of their capacity. Out of the pool the supplies go where they are needed most. And Lend-Lease is already working in both directions. We are, for instance, getting reciprocal Lend-Lease help from Britain. As more of our forces move overseas, this aspect of Lend-Lease becomes increasingly important.

Contributions to this United Nations pool are planned far in advance of delivery—necessarily, because of the time it takes to build ships and planes and tanks and because of the need to plan 2 or 3 years ahead. In the first months therefore, the most important accomplishments of Lend-Lease were in getting huge quantities of arms and other supplies into production and in building up supply routes and bases around the world.

Lend-Lease does more than provide fighting weapons. Supplies include also great quantities of food from American farms and scores of such varied items as powdered milk and fruit concentrates, steel and machine tools, shoes and clothing—everything necessary to a total war which is fought on the home front as well as on the battlefront.

Thousands of miles of enemy-infested oceans separate America from the war fronts. Lend-Lease supplies have to be flown over them in giant planes or sent through them in the merchant fleets of this country and the other United Nations. We ferry the planes. We maintain the orphaned merchant fleets of occupied countries like Norway. Our yards restore to fighting trim the warships of our Allies, which help protect the ocean routes.

That is the Lend-Lease supply job—not only making things but delivering them, getting them to places where they can be used against our enemies, building up bases and supply lines for our own forces at the same time.

And when victory is won, Lend-Lease has a vital part to play in the peace, too. Just as Lend-Lease aid is not a loan of money but an integral part of our own war effort, so settlement of the Lend-Lease account will not be in money. The benefits which the United States gives and receives will be determined on a much broader basis than that. Instead of raising a new war debt question, which would strangle trade,

Lend-Lease has been planned to lay the foundations for a settlement which will promote the economic welfare of the people of the United States and of all the other peoples of the world. A master agreement with Great Britain setting forth these principles has already been concluded. The details will be worked out after Lend-Lease has completed its part in winning the war.

That is the big job ahead now—helping the other peoples of the United Nations help us smash Hitler and the Japs, receiving their aid on the same terms and for the same ends. That's what Lend-Lease does.

CONTROLLING THE COST OF LIVING

However victorious we may be in battle, we can still lose the war—on the home front.

That is why we must be economically strong, reinforced against collapse and protected against inflation. The most important step we have taken so far against this danger is to place our civilian economy under the banner of the "General Maximum Price Regulation."

On April 28, 1942, the Office of Price Administration announced the General Maximum Price Regulation, to halt the rising cost of living. Prices on practically everything we eat, wear, and use and also on certain services such as tailoring and laundering were not to exceed the highest prices charged by the same sellers for the same articles and services during March 1942.

There was good reason to put an effective stop to rising prices. Since September 1939 when Germany's armies invaded Poland, the retail price average in this country had risen 25 percent. Some prices rose more, some less.

Three-quarters of that rise had taken place in the 12 months preceding the price control announcement. The American dollar was losing value, going the way of Confederate money and the Imperial German mark. It could happen here; it did happen here, to our first paper money, remembered in the Yankee expression "Not worth a Continental."

What did this increase mean in dollars and cents? Roughly, it meant this: if you had $25 a week to live on in March 1941 that same $25 a week was only worth $20 to you 12 months later.

Five dollars—the price of a pair of shoes, the cost of a new dress, the cost of a good-sized market-basket full of food—had been sacrificed to an invisible thief who picks your pocket. That thief is called inflation.

In general, we spent $125 in March 1942 for goods that cost $100 in August 1939; $185 in March 1942 for farm products that cost $100 in 1939; $167 in March 1942 for basic raw materials that cost $100 in August 1939.

These increases raised the cost of our war effort, and were reflected in taxes. War spending at a rate of 5 or more billion dollars a month was scheduled by the end of this year. If prices had been uncontrolled, the cost of our war effort would have been increased by many billion dollars. The last war cost us 31 billion dollars, but 13 and a half billion dollars of this sum represented price inflation.

Why does war bring rising prices?

The explanation is simple. Under the stimulus of the war effort, our national income headed toward as much as 117 billion dollars in 1942. Taxes and savings at present rates take up part of that income, but there was a prospect that 86 billion dollars might still be left to buy consumers' goods and services. But—civilian goods available to buy were valued at only 69 billion dollars.

That was the rub. A total of 86 billions to buy only 69 billions in goods. In simpler terms, for every $4 we had to spend, there were only $3 worth of goods to buy. The highest bidder would get the prize. If uncontrolled, prices would have increased to meet that highest bid.

But under price control, neither wholesalers nor retailers could charge more for their goods than they charged in March 1942.

Prices were not frozen by the Maximum Price Regulation. They could go down. But they couldn't go up.

Not all prices were regulated. For some commodities, fair prices can't be reckoned in advance. Sea-food, for instance, here and plentiful today, gone or scarce tomorrow. And the cost of fresh fruits and vegetables depends on the weather. Newspapers, books, and motion pictures were exempt from price control, as were personal and professional services. Price levels for some foods, including butter, eggs, lamb, and mutton, were specified in the Emergency Price Control Act.

Most of the goods on sale in America's 1,900,000 stores were placed under price ceilings, including rugs and hardware, clothing and furniture, many meat products, canned goods—to take a few random examples.

In addition to the General Maximum Price Regulations, the Office of Price Administration has also moved to limit rents in many defense areas. Rent is the largest single expenditure of the average American family. To install general price ceilings without attempting to control rents would go contrary to the general theory of price control—which is to keep down the cost of living. Rent would rise; there would be demands for higher wages; and the inflationary movement would be started once more.

Price control is the democratic way of preventing confusion in our economic system. It is an integral plank in the President's seven-point platform for a national economic policy. That platform provides that to keep the cost of living from spiraling upward we must:

"1 . . . tax heavily and in that process keep personal and corporate profits at a reasonable rate . . .

"2 . . . fix ceilings on the prices which consumers, retailers, wholesalers, and the manufacturers pay for the things they buy; and ceilings on rents for dwellings on all areas affected by war industries.

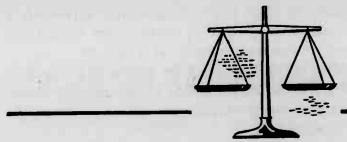
"3 . . . stabilize the remuneration received by individuals for their work.

"4 . . . stabilize the price received by growers for the products of their lands.

"5 . . . encourage all citizens to contribute to the cost of winning this war by purchasing War Bonds with their earnings instead of using those earnings to buy articles which are not essential.

"6 . . . ration all essential commodities of which there is a scarcity so that they may be distributed fairly among consumers and not merely in accordance with financial ability to pay the price for them.

"7 . . . discourage credit and installment buying and encourage the paying off of debts, mortgages, and other obligations; for this promotes savings, retards excessive buying, and adds to the amount available to the creditors for the purchase of War Bonds."



RATIONING FOR DEMOCRACY

We face a desperate and dangerous foe. To defeat that foe, we must make profound changes in our lives. One of the greatest changes to come upon us is rationing.

Rationing is a community plan to distribute equitably goods that are scarce and to use those goods to the best advantage in a nation at war. Need and social usefulness—not money or individual pleasures—decide who shall get scarce articles.

There are scarcities because total war demands the mobilization of all our productive capacities. Many of our factories must produce for the armed forces instead of for civilians, and scarcities make rationing necessary *in defense of the general welfare.*

Take sugar. Sugar makes alcohol and alcohol makes smokeless powder. Have you seen the guns of our fleet in the newsreels? Every time five of our 16-inch guns fire they use an acre of sugar cane. That's a lot of sugar. A lot of cups of coffee could be sweetened with it.

Or consider tires. By rationing tires we make sure that if you need a doctor at night he can drive to see you. Rationing enables farm trucks to continue to carry your fresh vegetables and eggs to town. Even if you can't drive your own car, you may still take a bus, thanks to rationing.

Rationing fortifies us at home by convincing each of us that he is getting a fair deal and equal treatment. Rationing supports the home-front morale. Discontent and defeatism would be rife if all scarce articles were allowed to go into the possession of those who could bid the highest.

Rationing protects our pocketbooks too, by preventing the bidding up of prices. We can all visualize men who would be

willing to offer as much as $100 for a single tire, but such a man might not be the one who needed it most—who would use it to the best advantage of the community as a whole.

Rationing also protects supplies. Before rationing was begun, many were inclined to hoard, fearing to be caught short. Once they realized that rationing would provide everyone with a fair share, hoarding diminished.

Our rationing organization is easy to understand. Policies for rationing are formulated by the Office of Price Administration. This office was given authority to ration retail sales by the War Production Board, based on the statutory powers of the President.

Rationing boards are appointed by local defense councils and approved by the Office of Price Administration. Housewives, union men, farmers, educators, business men, and professional men and women serve on these boards. Their work is to carry out the orders and enforce the policies laid down in Washington.

The rationing machinery works in several ways. Supplies are apportioned only among essential users where the commodity is, like rubber, so scarce that limited amounts cannot be given to everyone.

Another system may be used when there are enough supplies for the entire community as is the case with sugar. To distribute sugar, we allow so many ounces to each resident, and we arrange cards and stamps to see that each gets just one share.

England also uses a point system. Each person is given a coupon book with a certain number of points, which he can use to buy articles the point-values of which have been fixed. For example, a can of beans has a value of 4 points, a can of salmon a value of 16 points; a can of lobster, 16 points. Each family is allowed so many points a month.

To succeed, rationing demands good will and cooperation from you and me and our neighbors down the block. It is up to us to make it work. There is no better bulwark against disaster on the home front.

A SKELETON RADIO SCRIPT: PRODUCTION

(NOTE.—*The following radio script is included in the handbook for those interested in broadcasting a round-table discussion of the war production program. It suggests the type of local broadcast which can bring home to listeners the immensity of our war effort. There is no objection to rearrangement of the material.*

No elaborate production techniques are required. The script calls for an announcer, a local layman interested in knowing how our program is getting on, a city official, and someone well informed about war production—preferably someone actively engaged in it. The discussion is timed to run about 10 minutes.)

ANNOUNCER. We Americans are up to our ears in the biggest job in history—war production. To do it well, to give our fighting men the weapons they deserve, we need to know everything we can about our job. The following program is designed to do just that—to answer many of the questions that occur to you and me about the war effort.

We have with us a gentleman (Name and title of EXPERT) who has the vital inside facts. And (Name and title of OFFICIAL) is with us here, and (Name and occupation of CITIZEN). Do you want to step up and say hello, Mr. (Citizen)?

CITIZEN. Thank you. Hello, everybody.

ANNOUNCER. I guess you want to know, Mr. (Citizen), what Uncle Sam is getting in the way of armament for all the things you're doing without?

CITIZEN. Yes, I would. I'm doing without plenty.

ANNOUNCER. You're not the only one, (Citizen).

CITIZEN. That's right.

ANNOUNCER. Makes it sort of easier, doesn't it?

CITIZEN. Yes; it does.

ANNOUNCER. Same here. I was hiking for the bus this morning and I caught up with an old gentleman walking behind a lively young fellow who seemed to be pacing him. I asked the old gentleman if that was his trainer, and he said no, it was his chauffeur. But to get down to cases. Mr. (Expert), will

you give us some nice round figures to chew on? How big's our production program?

EXPERT. Well, through the first third of 1942, almost 160 billion dollars.

OFFICIAL. I didn't know there was that much money.

EXPERT. There isn't, Mr. (Official). And the Government's going to take mighty good care there never is.

CITIZEN. You mean we spent all that?

EXPERT. No. That sum was the total of the authorizations voted by Congress.

OFFICIAL. How much have we spent, Mr. (Expert)?

EXPERT. Actual disbursements, Mr. (Official)? As to that, the Government's doing business c. o. d., cash on delivery. All the contracts let by this spring called for payment of about 100 billion dollars.

OFFICIAL. That's real folding money.

EXPERT. Yes; if it were all in hundred-dollar bills, and the strongest man on earth were told he could have it if he could lift it——

CITIZEN. Say, is that offer open to everybody? I'm not the strongest man on earth, as a rule, but——

OFFICIAL. Are we getting out the goods? The planes and ships and tanks and jeeps?

EXPERT. Rather, Mr. (Official). To keep to the same date—and not make too happy—or unhappy—any Axis snoopers who may be listening in—Donald Nelson himself said we had increased our plane production by over 50 percent 3 months after Pearl Harbor. And we're doing better now. (Impressively) Better, much.

OFFICIAL. Big ones?

EXPERT. You wouldn't call them puddle-jumpers. An 82-ton bomber, 212 feet from wing tip to wing tip, and 42 feet 9 inches high, is a big one. And they've been rolling out since last fall.

OFFICIAL. How about those tanks the President called for early in the year?

EXPERT. On the way. From light ones—mere runabouts of 13½ tons—to heavies of 56 tons. Mediums of 28 tons.

CITIZEN. And 82-ton planes? How come heavier planes than tanks?

EXPERT. No use building tanks that can't move or are too slow.

CITIZEN. That's right. Like a boy building a boat in the cellar he can't get out the door.

OFFICIAL. How are we doing on ships, Mr. (Expert)?

EXPERT. That's the job of the Maritime Commission, and it's a whale of a job, with ships being sunk so often. We're concentrating right now on the Liberty ship. The Liberties are cargo carriers, 10,500 tons. Mass production, of course, since many thousand different parts go into each ship. We've been sliding them off in 105 days on an average and figure on cutting that to 90 days and less. We've been even launching 2 ships a day and schedules called for 3 a day by the end of 1942.

OFFICIAL. How about warships?

EXPERT. Our two-ocean Navy—our every-ocean Navy—is taking to the water. That's one job we started in time—even in September 1941 we had about 350 major combat ships building or on order.

CITIZEN. And guns?

EXPERT. Up—and up. The trend on rifles and submachine guns is typical of how the whole job's going. In June 1941 we turned out 1,500 a day. Today we're really into production, turning out many times that number. Mass production—up and up.

OFFICIAL. How are raw materials? I understand the Japs got a lot of scrap iron from this country before Pearl Harbor.

EXPERT. And since too. And they're going to get a lot more.

OFFICIAL. How's that. Oh, I see. Exploding shells, eh?

EXPERT. Right. TNT is going to distribute the scrap to them now. That's another item that we provided for in time. Even before Pearl Harbor we had several big plants, all over America, built or building. Now they're turning out the stuff.

CITIZEN. Mr. (Expert), what would you say were the big problems of the production job?

EXPERT. They were four. To get the plants, the machines, the raw materials, and the men—the trained workers.

CITIZEN. But didn't we have factories enough? I read somewhere that there were 185,000 manufacturing plants in America.

EXPERT. For producing civilian goods; yes. And it was our salvation, when they were converted to making munitions. Just one of our manufacturers—the biggest—was turning out more fabricated metal than all Japan—autos, refrigerators, and so on. Its facilities had to be converted to war production. That's been done. In fact, virtually all our big plants are going like nailers on war orders now. The Japs shall have his scrap.

OFFICIAL. He already has got some of it from our big bombers—Tokyo. And that was only the first time. Odd the Japs didn't hear them coming.

CITIZEN. How would they? When the bombers had rubber heels.

EXPERT. Rubber heels?

CITIZEN. Absolutely. Or so I've been told around town, every place I tried to buy a pair of rubber heels—they had to be saved for the big bombers.

EXPERT. I see. And quite a few American refrigerators gave a chill to Tokyo that night, eh? Well, that was the answer to our raw materials problem. The War Production Board banned or limited civilian use of critical materials and put them into war production.

OFFICIAL. You mentioned machines, Mr. (Expert). I should think we had enough machines. I should think——

EXPERT. That the same machines that make automobiles and refrigerators can make tanks and guns? Well, some of them could. But not all, and we had to have a lot of new special-purpose machines. We had a sizable machine-tool industry—it turned out 2 million dollars' worth in 1939—but that didn't begin to fill the order. Early in 1942 indications were it would turn out 2 billion dollars' worth by the year end.

CITIZEN. Wonder if everybody knows what machine tools are?

EXPERT. They're machines to make machines. They grind and bore and polish the metal parts that go into tanks and guns and planes.

CITIZEN. Are we having much labor trouble?

EXPERT. Decidedly not. American labor is doing its full share. Strikes have dwindled almost to nothing since Pearl Harbor. But, naturally, not enough workers had experience in making weapons and munitions.

CITIZEN. How did we get the trained workers?

EXPERT. The War Production Board's Labor Division trained nearly 3,500,000 workers in the 20 months it was in existence. And now the Manpower Commission is in charge of the training and is very much on the job. Through vocational and trade schools, and engineering colleges. And by in-plant training. Training within industry.

CITIZEN. In-plant training?

OFFICIAL. New apprentices—that the idea?

EXPERT. That's it. Lead men, foremen, and supervisors are trained to pass on their "know how" to new workers in the plants. And "upgrading" is extensively practiced. That's to say, the highly skilled mechanic is kept at work that none but he can do, and operations requiring less skill are taken from him and given to less skilled workers. So they keep stepping up.

CITIZEN. This war production program is some job.

EXPERT. Not another country in the world could do it. Here's one glimpse of its size: the land acquired for the program since it started—by lease, purchase, or transfer from other Government effort—is greater in area than all New Jersey and Connecticut.

CITIZEN. Looks like we mean business.

EXPERT. Well, we're business people. You can take it from the Germans themselves, our industrial mobilization won the first World War, and it will beat them as badly this time.

OFFICIAL. I guess people who think the Japs can turn out planes as good as ours have forgotten already what the stamp "Made in Japan" often meant.

CITIZEN. Imitation, eh? Fake and shoddy. But tell me, Mr. (Official), what is (state or city) doing in the way of war production?

OFFICIAL. (*He names two or three of the state's or city's principal activities in war production. These should be general, not specific, in description.*)

CITIZEN. Not bad for little old (state or city). And how has it affected employment Mr. (Official)? Fellows looking for odd jobs seem to be getting mighty scarce nowadays.

OFFICIAL. (*Gives briefly some figures on local employment, pay rolls, war bond purchases, and other factors bearing on local business conditions.*)

CITIZEN. One big job. When will we have enough, Mr. (Expert)?

EXPERT. We're leaving that up to Mr. Hitler and Mr. Hirohito. When they cry "Enough!" we'll stop. Till then, it's all out—100 percent—all around the clock—every American—for America!

ANNOUNCER. Ladies and Gentlemen, we have just brought you a discussion of our War Production Program by (*Name Official, Citizen, and Expert*).

FACTS AND FIGURES ABOUT WAR PRODUCTION

The Revolutionary War cost us half a billion dollars, the Civil War 12 billion dollars, and the World War 31 billion dollars. By the end of April, 1942, we had already spent 27 billion dollars for this war and had voted to spend 160 billion dollars.

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At the end of April, 1942, we were spending $92,000 a minute for war.

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At the end of March, 1942, war expenditures represented 35 percent of all incomes paid to individuals.

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We are spending $1,175 per capita to pay for our war production. The expenditure per capita for airplanes is $265, for ordnance $240, and for naval ships $115.

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A breakdown of the war program shows that of every $100 spent:

$23 goes for airplanes.
$21 goes for tanks, guns, and ammunition.
$12 goes for transport, equipage, and miscellaneous supplies.
$10 goes for naval ships.
$9 goes for industrial facilities.
$8 goes for posts, depots, and stations.
$5 goes for merchant ships.
$4 goes for stockpile and food exports.
$3 goes for pay, subsistence, and travel for the armed forces.
$1 goes for housing.
$4 goes for miscellaneous war expenditures.

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If every individual pledged 10 percent of his income to purchase war bonds, the Government would get 11 billion dollars a year—less than 25 percent of war costs for 1942.

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Military production of America, England, and Russia now exceeds Axis armament output.

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Production of war planes in 1942 exceeds the number of planes we have produced since the beginning of military aviation.

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Here are some examples of how we have converted our peacetime industry to war production: From lingerie to camouflage netting; baby carriages to field hospital food carts; lipstick cases to bomb fuses; outboard motors to gun carriages; business machines to shells; hair clipping machines to projectiles; silk ribbons and silk goods to parachutes; beer cans to hand grenades; mouse traps to tripod mounts; fishing reels to percussion primers; adding machines to automatic pistols; vacuum cleaners to gas mask parts.

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The aluminum for one pursuit plane would make 2,700 average pots and pans.

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A jalopy will provide the scrap steel requirements for 12 20-mm. aircraft cannons, or three 2,000-pound bombs.

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There is enough lead in a submarine's batteries to make 4,600 automobile batteries.

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To manufacture a juke box requires enough brass to make 750 cartridge cases, enough steel to make 5 light machine guns. That's why manufacture of juke boxes was prohibited.

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Driving your car 100 miles takes enough gasoline to carry 21 men and 7 guns in 7 army jeeps over 20 miles of open country.

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Every time one of our tankers is sunk, we lose enough gas to drive 13,000 cars from New York to San Francisco.

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The 1,700 tons of tin used in the manufacture of cars last year would make more than 1 billion food cans. The Army and Navy alone will require half that many this year.

Two thousand, eight hundred pneumatic rafts could be made from the rubber used to make baby pants in just 1 month last year.

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The rubber we used for pencil erasers in 1941 was enough to make 200,000 gas masks.

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By going without new garden hose this year, Americans made rubber available for 8,500 75-mm. gun carriages and more than 300 10-ton pontoon bridges.

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